

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION

B&B SOLUTIONS LLC
Plaintiff,

v.

NAMRA LLC
Defendant.

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§

Case No.

**PLAINTIFF’S COMPLAINT FOR
DECLARATORY JUDGMENT OF NON-INFRINGEMENT AND INVALIDITY**

Plaintiff B&B Solutions LLC (“Plaintiff”) files this Complaint for Declaratory Judgment of Non-Infringement and Invalidity against defendant Namra LLC’s (“Defendant”). Plaintiff states and alleges as follows:

NATURE OF THE ACTION

1. This is an action for declaratory judgment that U.S. Patent Nos. 10,271,617 (“the ‘617 patent”) and 10,342,298 (“the ‘298 Patent”) (collectively, “the Patents-in-Suit”) are invalid and not infringed by Plaintiff. This action is brought pursuant to the Declaratory Judgment Act, 28 U.S.C. §§ 2201 and 2202, and the Patent Laws of the United States, 35 U.S.C. § 100 *et seq.*, and for such other relief as the Court deems just and proper.

THE PARTIES

2. Plaintiff B&B Solutions LLC is a Texas limited liability company with its principal place of business located at 3012 Rice Blvd., Houston, Texas 77005, which is located in this judicial district.

3. On information and belief, Defendant Namra LLC is a California limited liability

company with its principal place of business at 42156 10th St., West Unit M, Lancaster, CA 93534.

JURISDICTION AND VENUE

4. This is a civil action seeking declaration of invalidity and non-infringement of the Patents-in-Suit and, therefore, arises under United States Patent Laws 35 U.S.C. § 271 et seq. and further under the Declaratory Judgment Act 28 U.S.C. §§ 2201-2202.

5. This Court has original jurisdiction over the subject matter of these claims pursuant to 28 U.S.C. §§ 1331 and 1338(a).

6. This Court has personal jurisdiction over Defendant because Defendant has sufficient business or contacts within the State of Texas to justify jurisdiction under the United States Constitution and the Texas Long Arm Statute. On information and belief, Defendant has had substantial contacts with the State of Texas in connection with the sale and/or offering for sale of products asserted by Defendant to be covered by one or more claims of the Patents-in-Suit. In particular, on information and belief, Defendant regularly ships products to customers located within this District, Defendant has contracts with retailers in this District, and Defendant's products are sold in retail stores located within this District.

7. This Court also has personal jurisdiction over Defendant because Defendant purposefully directed its activities at residents of this District, including taking steps to enforce the Patents-in-Suit against Plaintiff, a Texas resident, and Plaintiff's request for declaratory relief contained in this Complaint arises out of and relates to those activities. As set forth herein, Defendant's purposeful contacts with this District are sufficient such that the maintenance of this suit does not offend traditional notions of fair play and substantial justice. Furthermore, this District has a substantial interest in protecting its residents from claims of patent infringement that may be unwarranted. Those contacts include alleging that products sold or licensed to customers

by Plaintiff (the “Accused Products”) infringe the Patents-in-Suit, sending emails and letters to Plaintiff and Plaintiff’s counsel threatening to file a patent infringement action in district court against Plaintiff, and filing an Amazon Utility Patent Neutral Evaluation (“Amazon Evaluation”) proceeding to have Plaintiff’s Accused Products removed from the Amazon marketplace. Those allegations, letters, emails, and Amazon Proceeding created sufficient contacts with Texas and form the basis for the present action. By sending enforcement letters into this District, Defendant threatened patent infringement against Plaintiff in this District. Sales and use of the Accused Products occurred within this District and therefore the alleged infringement occurred within this District. By filing the Amazon Evaluation, Defendant engaged in extra-judicial patent enforcement, enlisting a third party (Amazon) to remove Plaintiff’s products from the Amazon marketplace. Defendant’s conduct was directed toward Plaintiff in Texas and Defendant’s intent was to negatively impact Plaintiff’s sales. The brunt of the harm—measured in lost sales—will be felt by Plaintiff in Texas. Therefore, the extrajudicial enforcement efforts undertaken by Defendant are sufficient to establish specific personal jurisdiction. Because Defendant’s express aim was to halt Texas-based sales by a Texas resident, jurisdiction over Defendant is proper. Filing the Amazon Evaluation is an action that has had and will have adverse consequences for Plaintiff’s business and future dealings with the Amazon marketplace. Defendant knew Plaintiff was headquartered in Texas, purposefully directed its conduct at the forum state, and intended to effect Plaintiff in Texas. Defendant’s intentional conduct was calculated to cause injury in Texas.

8. Venue is proper in this district pursuant to 28 U.S.C. §§ 1391(b), (c), (d) and 1400(b). Plaintiff is a Texas limited liability company which maintains its principal place of business in Houston, Texas. As stated above, a substantial part of the events giving rise to Plaintiff’s claim occurred in this judicial district. Litigating in the Southern District of Texas is

not unduly burdensome to Defendant and this District has a substantial interest in the matter, because Defendant threatened litigation and instituted extra-judicial enforcement against Plaintiff residing in, and conducting business in, this District.

STATEMENT OF FACTS

9. There exists a real and immediate controversy between Plaintiff and Defendant concerning Defendant's allegations that Plaintiff infringes one or more claims of the Patents-in-Suit.

10. Specifically, on September 20, 2019, Defendant's counsel sent a letter to Plaintiff in Texas stating that Plaintiff was infringing certain claims of the Patents-in-Suit and demanding that Plaintiff immediately cease and desist its allegedly infringing activity. A copy of that letter is attached hereto as Exhibit A.

11. On November 27, 2019, Defendant filed the Amazon Evaluation asking Amazon to remove Plaintiff's Accused Products from the Amazon marketplace, stating that Defendant "is likely to prove [Plaintiff's] Accused Products infringe Claim 1 of the '298 Patent." A copy of the Amazon Evaluation is attached hereto as Exhibit B.

12. The exhibits Defendant attached to the Amazon Evaluation include claim charts detailing the alleged infringement and screen shots from Plaintiff's Amazon retail webpages, including one that states "UnbuckleMe was invented by a mom and daughter team from Texas." (emphasis added). A copy of the exhibits to the Amazon Evaluation is attached hereto as Exhibit C.

13. On December 6, 2019, Defendant's counsel sent an email to Plaintiff (via Plaintiff's counsel) threatening to file a patent infringement lawsuit in district court.

14. Plaintiff denies that it infringes any valid claim of the Patents-in-Suit. Therefore, a

genuine and legal dispute exists between the Plaintiff and Defendant hereby conferring jurisdiction upon this Court pursuant to the Declaratory Judgment Act, 28 U.S.C. §§ 2201 and 2202.

COUNT I
(DECLARATION OF NON-INFRINGEMENT OF THE PATENTS-IN-SUIT)

15. Plaintiff hereby incorporates by reference the previous allegations as if set forth fully herein.

16. Plaintiff has not and does not make, use, offer to sell or sell any product which infringes any valid claim of the Patents-in-Suit either directly or through the Doctrine of Equivalents.

17. Plaintiff has not and does not induce or contribute to the alleged infringement of the Patents-in-Suit.

18. As set forth above, Defendant contends that the Accused Products infringe either directly or under the Doctrine of Equivalents one or more claims of the Patents-in-Suit.

19. An actual and live justiciable controversy exists between Defendant and Plaintiff concerning non-infringement of the Patents-in-Suit. A declaration of rights is both necessary and appropriate to establish that Plaintiff is not committing patent infringement by offering for sale and selling the Accused Products allegedly covered by the Patents-in-Suit. This action seeks a declaration that the Patents-in-Suit are not infringed.

20. Plaintiff is being injured by Defendant's threats of patent infringement and extra-judicial enforcement actions, including asserting Plaintiff's Accused Products infringe the '298 Patent in the Amazon Evaluation.

21. Therefore, Plaintiff is entitled to an Order from this Court declaring that the Accused Products do not infringe any valid claim of the Patents-in-Suit and for all other relief to which it is entitled.

22. The requested relief can redress the injury being suffered by Plaintiff. A declaratory judgment of patent non-infringement regarding the Patents-in-Suit and an injunction preventing Plaintiff from enforcing the Patents-in-Suit will permit Plaintiff to offer for sale and sell the Accused Products, including on the Amazon marketplace, without the threat or potential consequences of patent infringement litigation.

COUNT II
(DECLARATION OF INVALIDITY OF THE PATENTS-IN-SUIT)

23. Plaintiff hereby incorporates by reference the previous allegations as if set forth fully herein.

24. The Patents-in-Suit are invalid.

25. As set forth above, Defendant contends that the Accused Products infringe either directly or under the Doctrine of Equivalents one or more claims of the Patents-in-Suit.

26. An actual and live justiciable controversy exists between Defendant and Plaintiff concerning invalidity of the Patents-in-Suit. This action seeks a declaration that the Patents-in-Suit are invalid under 35 USC § 102 and 103.

27. Therefore, Plaintiff is entitled to an Order from this Court declaring that the Patents-in-Suit are invalid and for all other relief to which it is entitled.

JURY DEMAND

Pursuant to the Federal Rules of Civil Procedure 38, Plaintiff demands a trial by jury on all issues so triable.

PRAYER FOR RELIEF

Wherefore the above stated reasons Plaintiff prays for a declaratory judgment against Defendant as follows:

a. Declare that the Accused Products have not and do not infringe any claim of the

Patents-in-Suit;

- b. Declare that the Patents-in-Suit are invalid;
- c. Permanently enjoining Plaintiff from enforcing or attempting to enforce the Patents-in-Suit against Plaintiff or filing an Amazon Evaluation;
- d. An award of costs of suit to Plaintiff; and
- e. Award Plaintiff any additional relief as the Court may deem just and proper under the circumstances.

Dated: December 9, 2019

Respectfully submitted.

BELL NUNNALLY & MARTIN LLP

By: /s/ Jeffrey A. Tinker

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September 20, 2019

Sent Via Email and UPS

B&B Solutions, LLC dba "UnbuckleMe"

Attn:

Rebecca Davison

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becca@unbuckleme.com

Barbara Heilman

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Re: Notice of Patent Infringement

Ms. Davison and Ms. Heilman:

My firm represents Namra LLC ("Namra"). As you know, Namra is engaged in the development, manufacture, marketing, sales and distribution of innovative consumer products, including its "The Car Seat Key" buckle release device. Namra is the owner of US Patent No. 10,271,617 ("the '617 Patent") and US Patent No. 10,342,298 ("the '298 Patent") directed to it's The Car Seat Key device, which are enclosed. UnbuckleMe is infringing certain claims of the '617 Patent and the '298 Patent with the sale of its UnBuckleMe product. Namra demands that UnbuckleMe immediately cease its infringing activity, desist from such infringing activity in the future, and comply with Namra's other requirements set out in this letter.

We are in possession of your company's UnbuckleMe product and have compared it to the claims of the '617 Patent and the '298 Patent. Those comparisons show that your manufacture, use, and sale of the UnbuckleMe product infringes claims of the '617 Patent and the '298 Patent in violation of Section 271 of the Patent Act.

Moreover, your knowledge of Namra and its products, as evidenced by your correspondence to them, copying of elements of their product design and their product colors, and various other actions you have taken, plainly establish that your infringement was willful. As such, UnbuckleMe is liable for willful patent infringement, subjecting it to potential financial

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liability for enhanced damages of up to three times the damages found or assessed by a court as well as attorney fees.

Patent infringement is a serious matter. Namra therefore demands that UnbuckleMe:

1. Immediately cease and desist from all further activity that infringes the claims of the '617 Patent and the '298 Patent, including all manufacture and sales of the UnbuckleMe product;
2. Provide Namra with sufficient information to determine the number of all UnbuckleMe products sold since April 30, 2019 and all proceeds therefrom and pay Namra appropriate compensation for Namra's damages due to UnbuckleMe's infringement; and
3. Promptly provide Namra with written confirmation that UnbuckleMe will comply with these demands.

UnbuckleMe is specifically advised that any failure or delay in complying with these demands may further compound the damages for which UnbuckleMe may be liable.

If UnbuckleMe does not provide Namra with a satisfactory response to these demands by the close of business on October 4, 2019, Namra is prepared to take all steps necessary to protect its valuable intellectual property rights, without further notice to UnbuckleMe.

The above is not an exhaustive statement of all the relevant facts and law. Namra expressly reserves all its legal and equitable rights and remedies, including the right to seek injunctive relief and recover monetary damages.

Very truly yours,

KW Law, LLP

Jeremy Kapteyn

Enclosures

(12) **United States Patent**
Riley-Carter et al.

(10) **Patent No.:** **US 10,271,617 B2**
(45) **Date of Patent:** **Apr. 30, 2019**

(54) **DEVICE AND SYSTEM FOR ASSISTING
ACTUATION OF A BUCKLE RELEASE**

24/4494; Y10T 24/44274; Y10T
24/44641; Y10T 24/4465; Y10T
24/44923; Y10T 24/44769; D06F 55/00

(71) Applicant: **Namra LLC**, Quartz Hill, CA (US)

See application file for complete search history.

(72) Inventors: **Kristin Riley-Carter**, Quartz Hill, CA
(US); **Mauro Riley-Guglielmo**, Quartz
Hill, CA (US)

(56) **References Cited**

U.S. PATENT DOCUMENTS

(73) Assignee: **Namra LLC**, Lancaster, CA (US)

RE32,338 E * 1/1987 Alexander A61B 17/122
294/16
4,938,214 A * 7/1990 Specht A61B 17/062
606/167
5,282,737 A 2/1994 Ray
5,625,931 A * 5/1997 Visser A44B 99/00
24/508

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

7,384,086 B2 6/2008 Lukaszynski et al.

8,539,862 B1 9/2013 Robinson

(Continued)

(21) Appl. No.: **15/799,911**

(22) Filed: **Oct. 31, 2017**

(65) **Prior Publication Data**

US 2018/0116344 A1 May 3, 2018

OTHER PUBLICATIONS

Barbara Heilman and Becca Davison, UnbuckleMe product, <https://unbuckleme.com/>.

(Continued)

Related U.S. Application Data

(60) Provisional application No. 62/415,407, filed on Oct.
31, 2016.

(51) **Int. Cl.**

A44B 11/25 (2006.01)

B60N 2/28 (2006.01)

A44B 15/00 (2006.01)

Primary Examiner — Robert Sandy

Assistant Examiner — Michael S Lee

(74) *Attorney, Agent, or Firm* — KW Law, LLP

(52) **U.S. Cl.**

CPC **A44B 11/2573** (2013.01); **A44B 11/2523**
(2013.01); **A44B 11/2526** (2013.01); **A44B**
11/2546 (2013.01); **A44B 11/2549** (2013.01);
A44B 11/2511 (2013.01); **A44B 15/005**
(2013.01); **B60N 2/2812** (2013.01); **B60N**
2002/2818 (2013.01)

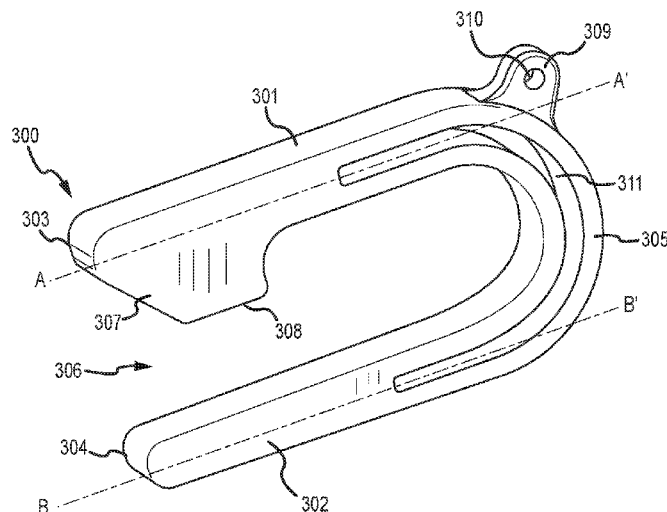
(57) **ABSTRACT**

A device and system that can be used to assist actuation of
a buckle release is disclosed. A device can include a first arm
and a second arm joined by a U-shaped connecting portion.
The device can also include a button contact feature. The
device can be inserted over a buckle with the button contact
feature over a buckle release button, and the device used to
assist engagement of the buckle release button by a person
operating the device. A system can include a device and
various additional features or accessories.

(58) **Field of Classification Search**

CPC B25B 9/02; A47G 21/106; B29C 66/8614;
A01B 1/18; Y10T 24/44778; Y10T

12 Claims, 11 Drawing Sheets



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References Cited

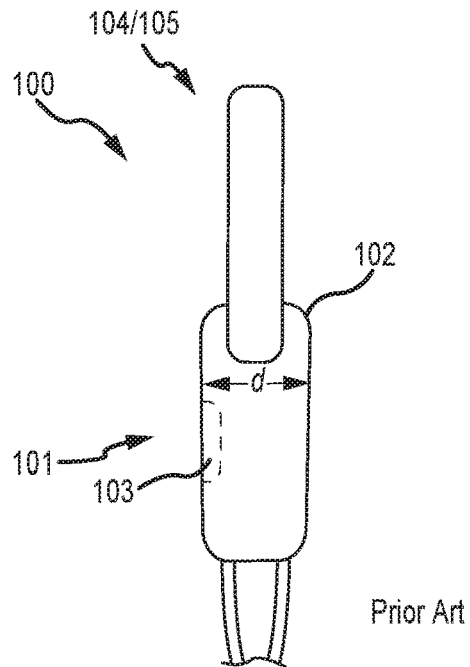
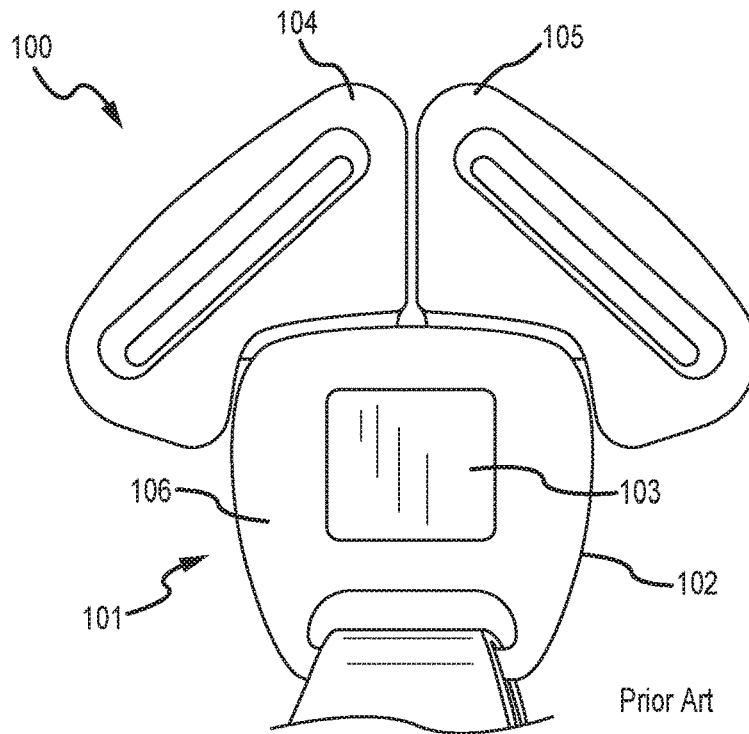
U.S. PATENT DOCUMENTS

2011/0308057 A1* 12/2011 Abrams B25B 7/02
29/426.5
2018/0071902 A1 3/2018 Davison et al.

OTHER PUBLICATIONS

CSC Solutions LLC, Bucklebee product, <http://www.bucklebee.com/>.
Marlene Robinson, BuckleBopper product, <https://bucklebopper.com/>.
Mathiowetz et al., "Grip and Pitch Strength: Normative Data for Adults," Arch. Phys. Med. Rehabil., vol. 66, pp. 69-74 (1985).
U.S. Appl. No. 62/394,080, filed Sep. 13, 2016.

* cited by examiner



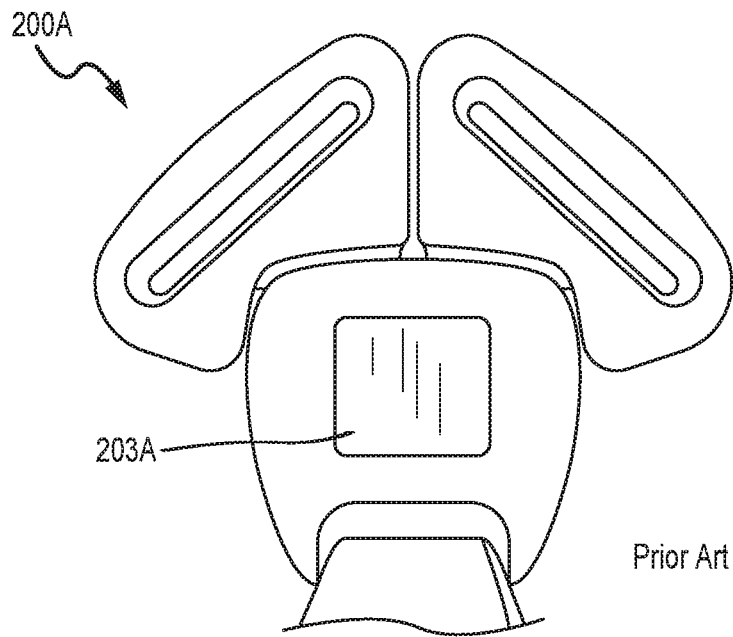


FIG. 2A

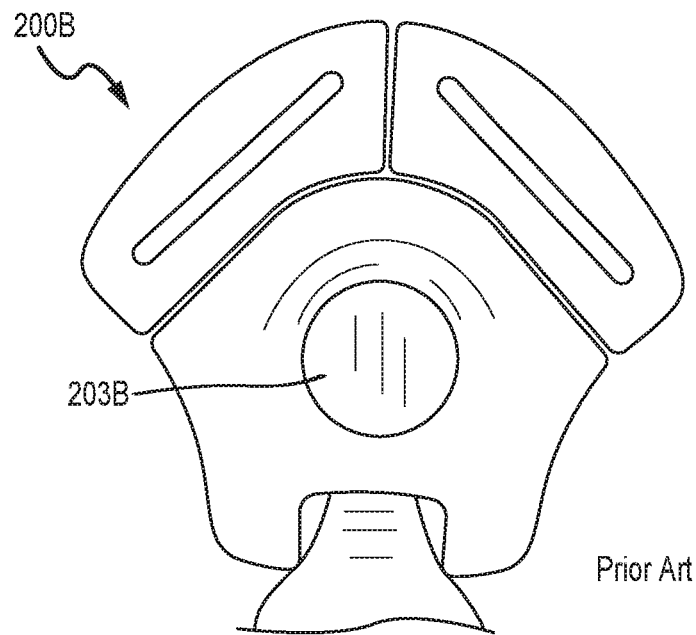


FIG. 2B

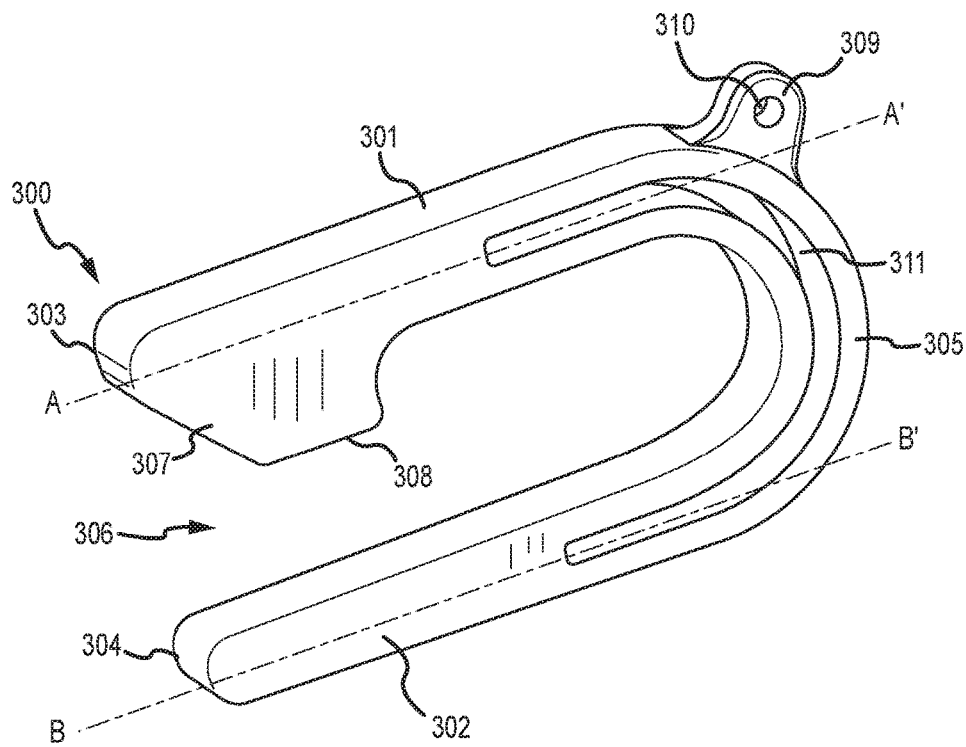


FIG.3A

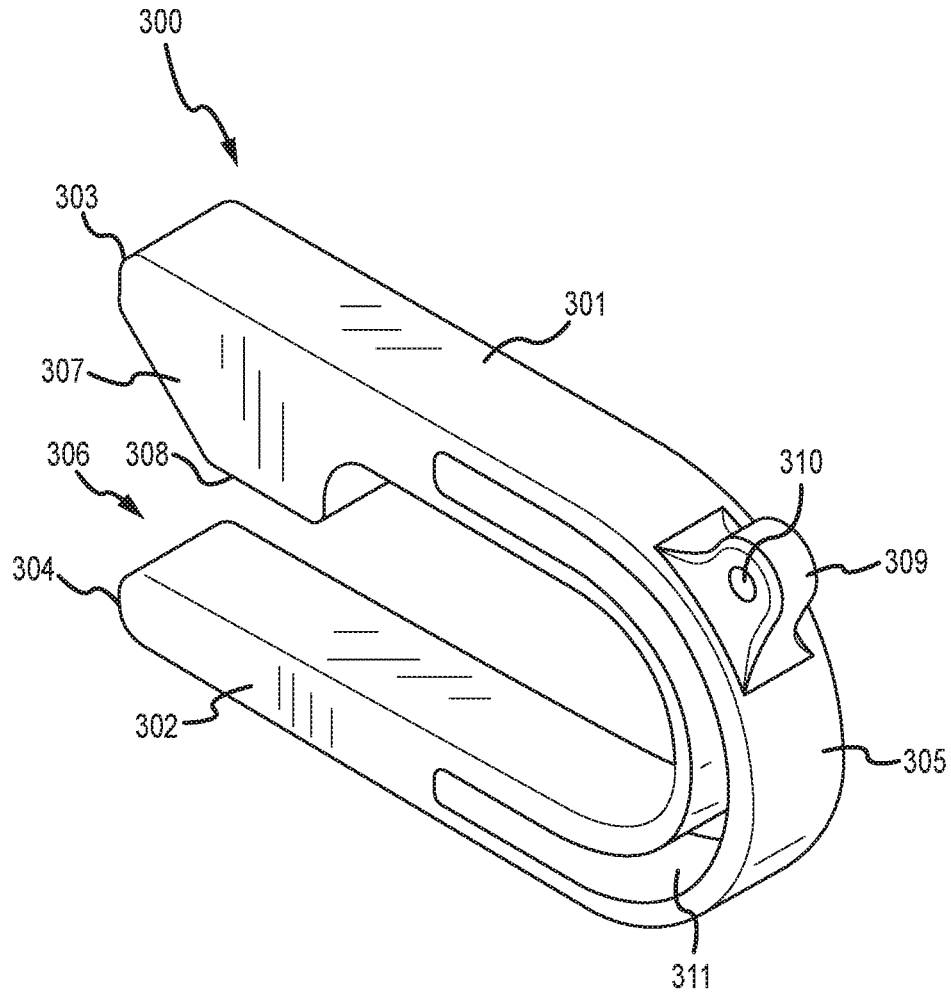


FIG. 3B

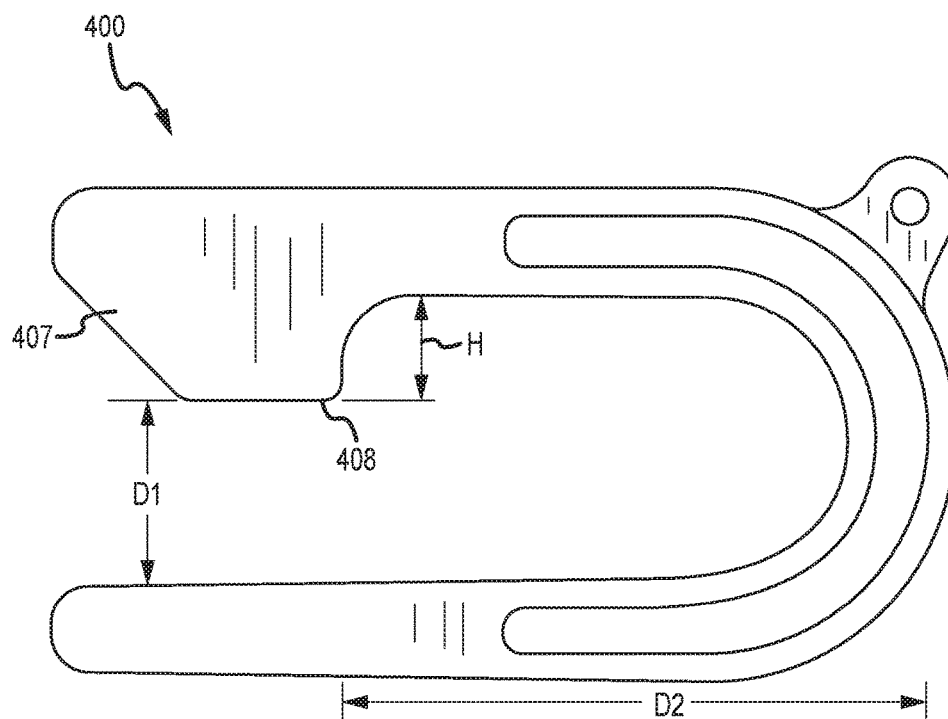


FIG. 4

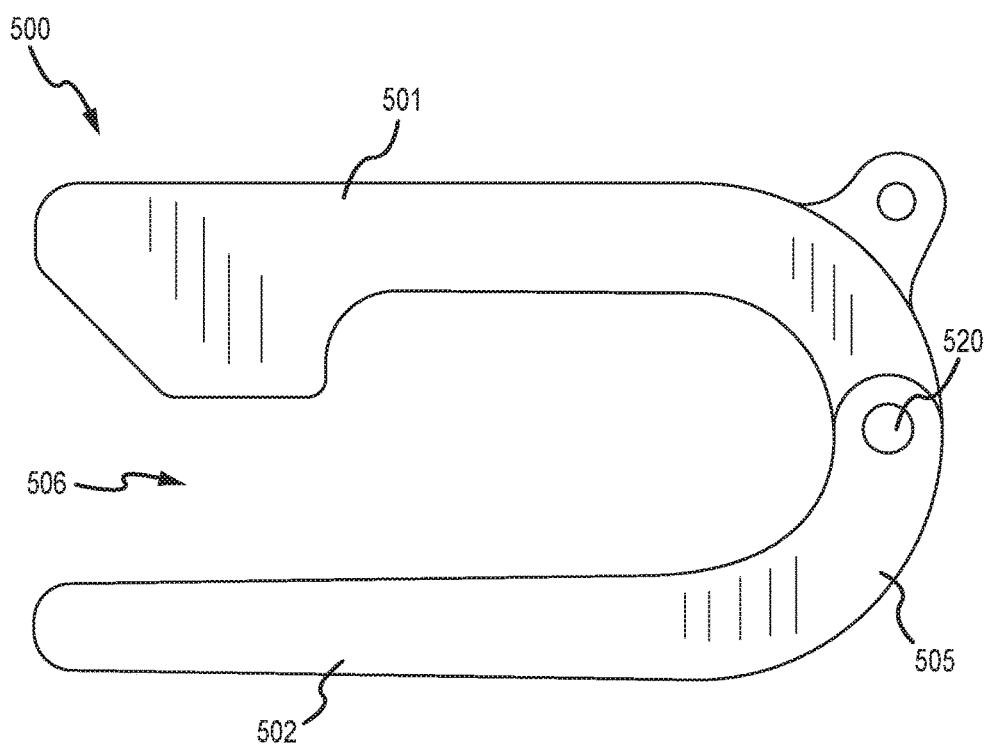


FIG.5

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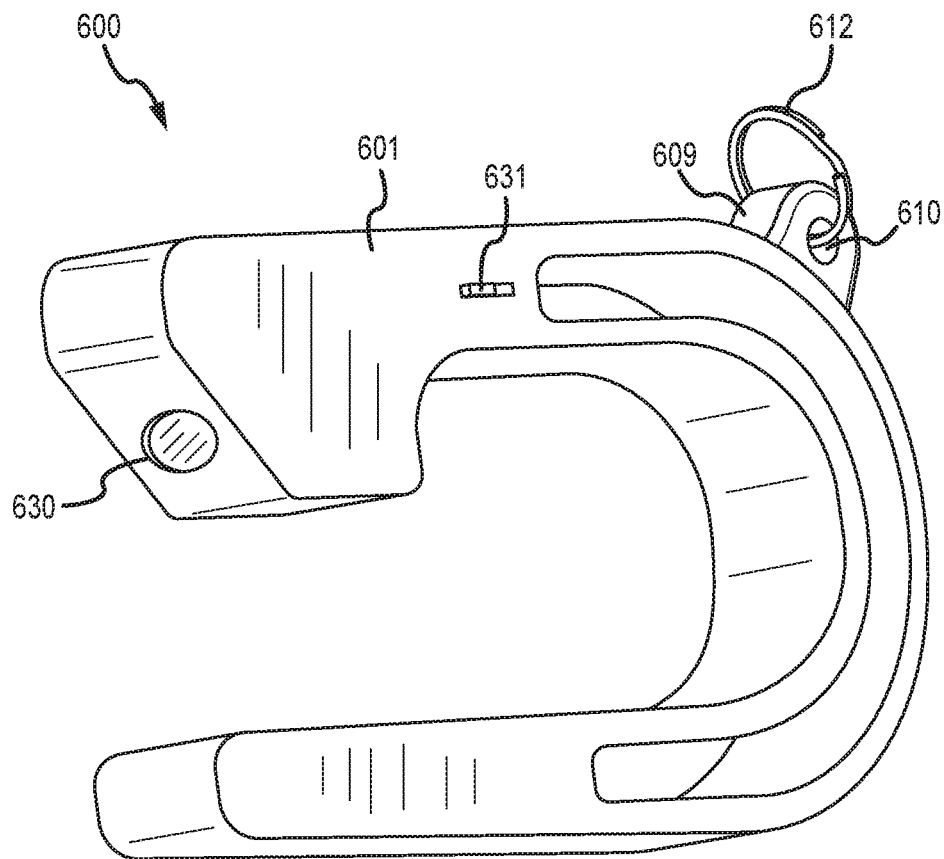


FIG.6

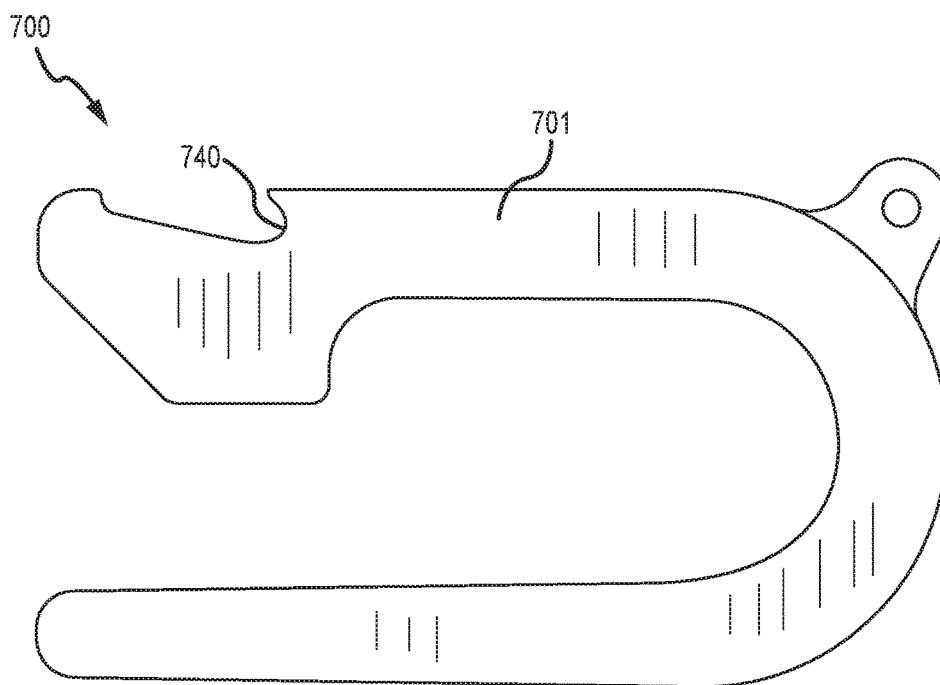


FIG. 7

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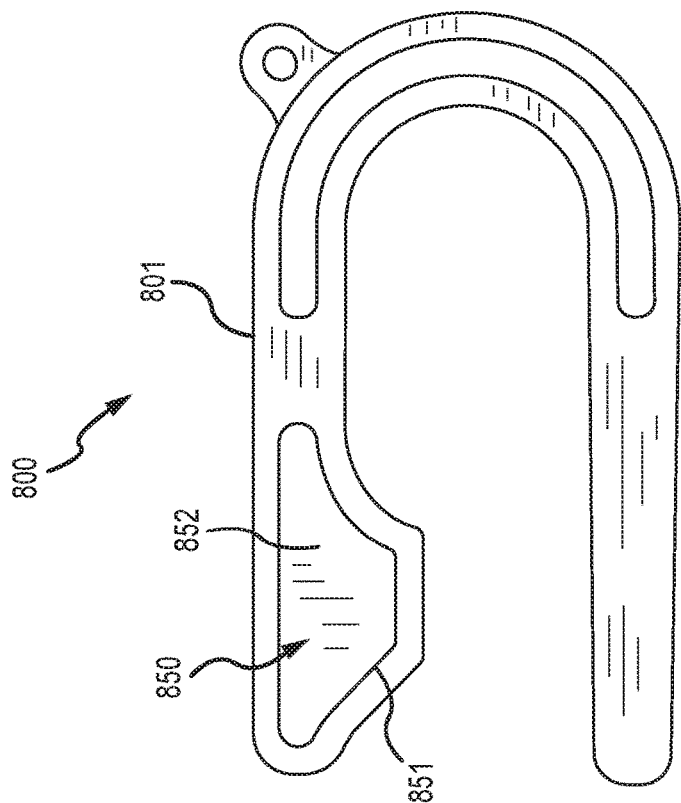


FIG. 8A

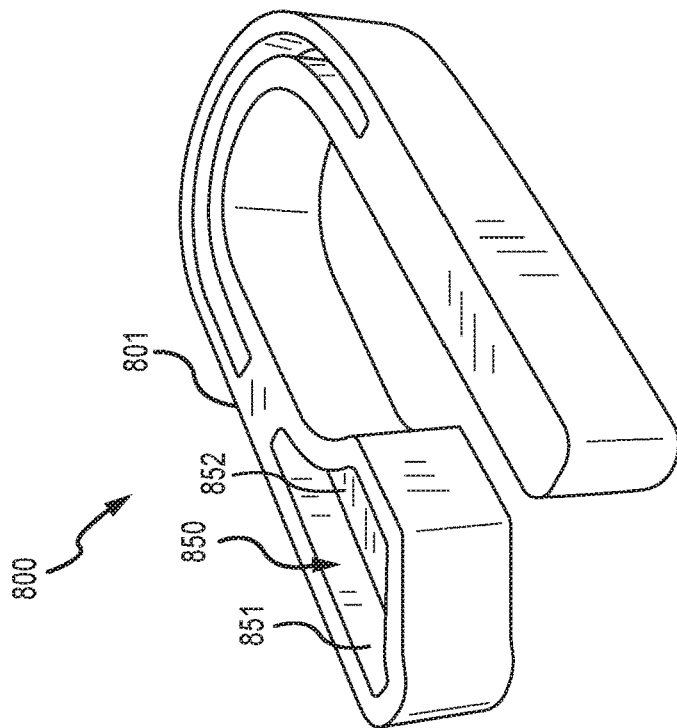


FIG. 8B

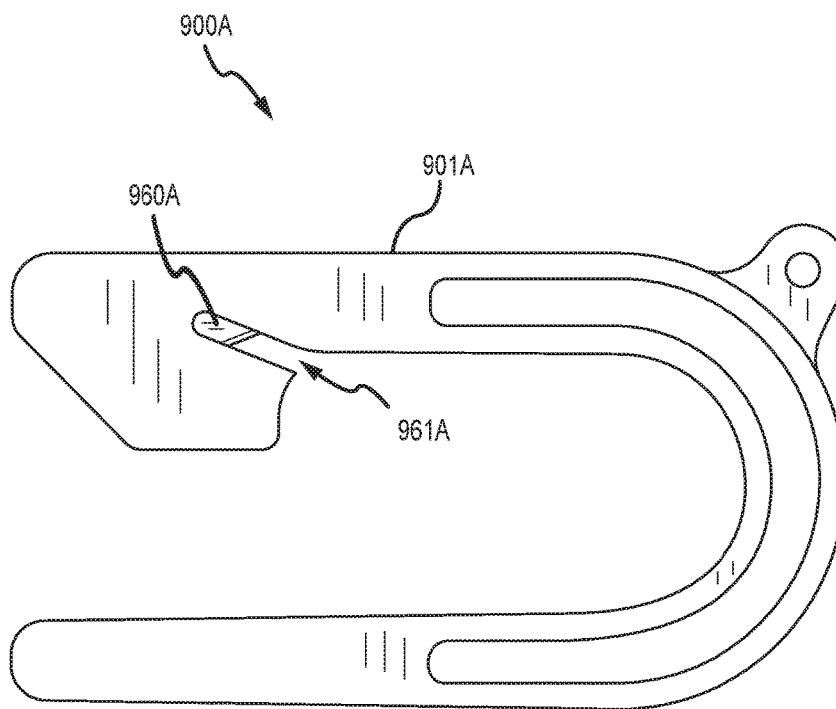


FIG.9A

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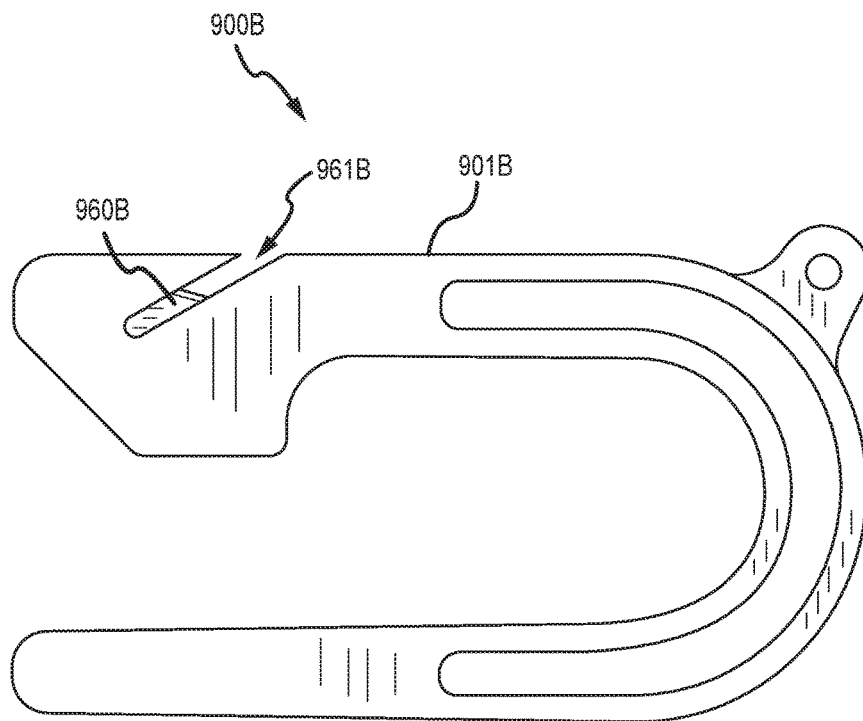


FIG. 9B

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**DEVICE AND SYSTEM FOR ASSISTING
ACTUATION OF A BUCKLE RELEASE****CROSS-REFERENCE TO RELATED
APPLICATIONS**

This application claims the benefit of and priority to U.S. Provisional Application Ser. No. 62/415,407, entitled “DEVICE AND SYSTEM FOR ASSISTING ACTUATION OF A BUCKLE RELEASE,” filed on Oct. 31, 2016. The entire disclosure of the aforementioned application is incorporated herein by reference for any purpose.

FIELD

The present disclosure relates to a device and system for actuation of a buckle release. In particular, the disclosure relates to a device and system that can be used to assist actuation of buckle release buttons in restraint system buckles.

BACKGROUND

Restraint systems such as child safety seats used in automobiles as well as restraint systems used in other settings frequently include a buckle-type fastening mechanism to secure two or more portions of the restraint system around a restraint system occupant. A buckle-type fastening mechanism generally includes a buckle attached to an end of a first section of restraint system belting and a tongue or latchplate portion attached to a second section of restraint system belting. The tongue is inserted into the buckle where it is releasably latched to secure the first and second sections of restraint system belting. Child safety seats frequently include a third section of belting with a second tongue that is inserted into the buckle adjacent the first tongue, with both tongues being secured by the buckle.

A buckle generally comprises a housing containing a spring-loaded latching mechanism for releasably latching the tongue or tongues within the buckle. A typical buckle housing comprises an aperture containing an actuating button for operating and releasing the latching mechanism. A spring in the latching mechanism exerts a bias urging the button and/or latching mechanism toward the latched position. The button can be operated by depressing the button using a thumb or fingertip against the bias of the spring with sufficient pressure to overcome the spring force of the latching mechanism and move the button and mechanism from the latched position to a release position, thereby causing the latching mechanism to release the tongue(s) from the latched condition. In a typical buckle, the area of the actuating button approximates or is configured to be pressed by a person's thumb or fingertip. The surface of the actuating button against which the thumb or fingertip presses is generally flush with or recessed from the surface of the housing surrounding the button.

A prior art buckle fastening system **100** is illustrated in FIGS. **1A** and **1B**. Buckle fastening system **100** includes buckle **101** comprising buckle housing **102** and buckle release button **103**. Buckle fastening system **100** also includes first and second tongues **104** and **105**. Buckle housing **102** has a depth **d**. Buckle housing **102** further includes a button surround **106** defining an opening in the front face of the buckle that defines the opening for buckle release button **103**. Buckle release buttons can be configured in a variety of shapes, including the square and circular buttons **203A** and **203B** of prior art buckle fastening systems

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200A and **200B** illustrated in FIGS. **2A** and **2B**, respectively, as well as various other geometric and irregular shapes.

Buckle fastening systems such as those described above can be inconvenient or challenging for certain people to operate for various reasons, including individual variability in hand and finger size and strength, certain physical or medical conditions such as tendonitis and arthritis, and the like. Likewise, the force required for actuation of buckle releases used for certain car seat models can be relatively high, creating discomfort, pain, or fatigue for users, for example, that may be required to operate such a buckle on a frequent basis in various circumstances. Devices and systems that can be used to assist actuation of buckle releases are desirable.

The present disclosure provides devices and systems that can be used to assist actuation of a restraint system buckle release button.

SUMMARY

In various embodiments, a device for actuating a buckle release button can comprise a first arm, a second arm, and a connecting portion disposed between the first arm and the second arm. A first arm can comprise a first end and a button contact feature with a button contact surface. The first arm can define a first axis, and the second arm can define a second axis. The connecting portion can comprise a U-shape, and the first arm and the second arm can comprise a laterally-opposed configuration. A device for actuating a buckle release button can comprise an attachment feature. A device can have a unitary constriction and can comprise a polymer material. A device can be configured to be elastically deformable in one of the first arm, the second arm, and the connecting portion to provide for movement of the button contact surface through a first deflection distance in response to a first deflection force. A device can be configured to provide a first restoring force in response to the movement through the first deflection distance. A device can comprise a first spring constant. A device can comprise a relief slot. A relief slot can be disposed in one of the first arm, the second arm, and the connecting portion of a device. A relief slot can provide for one of a reduced first restoring force and a reduced first spring constant relative to an equivalent device lacking a relief slot.

A first deflection distance can be sufficient to actuate a buckle release device. A button contact feature can comprise a button contact feature height. The button contact feature height can be configured to provide buckle housing clearance at the first deflection distance. A device can comprise an inter-arm dimension. In various embodiments, an inter-arm dimension can be configured to provide a clearance fit with respect to a buckle housing. In various embodiments, an inter-arm dimension can be configured to provide a compression fit with respect to a buckle release button. Insertion of a buckle into a device configured to provide a compression fit with respect to a buckle release button can produce a first deflection force, and the first restoring force produced by the device in response to the first deflection force can provide buckle release actuation assistance.

In various embodiments, a system for actuating a buckle release is provided. A system can comprise a buckle release device and an attachment device. A buckle release device can comprise an attachment feature configured to receive an attachment device. The attachment device can be inserted into the attachment feature and can be removably attached to the attachment feature. An attachment device can comprise one of a key ring, a carabiner, a steel cable loop, a chain, a

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wire, and a lanyard. A system in accordance with various embodiments can comprise one of a flashlight and a seat belt cutter.

BRIEF DESCRIPTION OF THE DRAWINGS

The subject matter of the present disclosure is particularly pointed out and distinctly claimed in the concluding portion of the specification. A more complete understanding of the present disclosure, however, may best be obtained by referring to the detailed description and claims when considered in connection with the drawing figures.

FIGS. 1A and 1B illustrate front and side views of a prior art buckle fastening system, respectively;

FIGS. 2A and 2B illustrate prior art buckle fastening systems having different buckle release button shapes;

FIGS. 3A and 3B illustrate perspective views of a device for actuating a buckle release button in accordance with various embodiments;

FIG. 4 illustrates a side view of a device for actuating a buckle release button in accordance with various embodiments;

FIG. 5 illustrates a side view of a device for actuating a buckle release button in accordance with various embodiments;

FIG. 6 illustrates a front perspective view of a device for actuating a buckle release button in accordance with various embodiments;

FIG. 7 illustrates a side view of a device for actuating a buckle release button in accordance with various embodiments;

FIGS. 8A and 8B illustrate side and perspective views of a device for actuating a buckle release button in accordance with various embodiments; and

FIGS. 9A and 9B illustrate side views of devices for actuating a buckle release button that include a belt cutter in accordance with various embodiments.

DETAILED DESCRIPTION

The detailed description of exemplary embodiments herein makes reference to the accompanying drawings, which show exemplary embodiments by way of illustration and their best mode. While these exemplary embodiments are described in sufficient detail to enable those skilled in the art to practice the inventions, it should be understood that other embodiments may be realized and that logical and mechanical changes may be made without departing from the spirit and scope of the inventions. Thus, the detailed description herein is presented for purposes of illustration only and not of limitation. For example, the steps recited in any of the method or process descriptions may be executed in any order and are not necessarily limited to the order presented. Furthermore, any reference to singular includes plural embodiments, and any reference to more than one component or step may include a singular embodiment or step. Also, any reference to attached, fixed, connected or the like may include permanent, removable, temporary, partial, full and/or any other possible attachment option. Additionally, any reference to without contact (or similar phrases) may also include reduced contact or minimal contact.

As used herein, the term “actuate” means to cause a device to operate, such as a fastening mechanism release.

As used herein, the term “spring constant” means an approximation of a factor characteristic of an elastically deformable material in a particular configuration within the elastic limits of the material in the configuration.

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As used herein, the term “unitary construction” means constructed of a single piece of material.

With reference to FIGS. 3A and 3B, a device 300 is illustrated. As described herein, device 300 can be used to assist actuation of a buckle fastening system. In accordance with various embodiments, device 300 can comprise a first arm 301, a second arm 302, and a connecting portion 305 disposed between the first arm and the second arm. First arm 301 can have an elongated configuration and define a first axis A-A', and second arm 302 can have an elongated configuration and defines a second axis B-B'. In various embodiments, a first arm, second arm, and/or connecting portion can have a square or rectangular cross section, or they can have a circular, ellipsoid, or other geometric or non-geometric cross section. Device 300 can be configured such that first arm 301 and second arm 302 comprise a laterally-opposed configuration, as illustrated, with distal end 303 of first arm 301 and distal end 304 of second arm 302 configured opposite one another. Connecting portion 305 can comprise a U-shaped segment joining the proximal ends of first arm 301 and second arm 302. In various embodiments, axes A-A' and B-B' of a device such as device 300 can be substantially aligned with one another, or the axes may converge or diverge from the distal ends of the first and second arms to the proximal portion of the arms. In various embodiments, a connecting portion can have other configurations or profiles, such as a rectangular profile or any other profile suitable to provide a first device arm and a second device arm in a laterally-opposed configuration.

First arm 301 and second arm 302 can define a buckle space 306 between the interior surfaces of the arms. Device 300 can comprise a button contact feature 307 extending into the buckle space 306 from the interior surface of first arm 301. Button contact feature 307 can comprise a button contact surface 308 facing toward second arm 302. Button contact feature 307 may be located near the distal end of first arm 301. In various embodiments, first arm 301 may extend distally past the location of button contact feature 307. Button contact feature 307 and button contact surface 308 can be configured to operatively engage a buckle fastening system button, as described in greater detail below.

In various embodiments, device 300 can comprise an attachment feature 309. An attachment feature such as attachment feature 309 can comprise a flange or protrusion configured to facilitate attachment of device 300 to a set of keys, for example, by using an attachment device such as a key ring, carabiner, a steel cable loop, a chain, a wire, or a lanyard. Attachment feature 309 can comprise an aperture 310 through which an attachment device can be inserted. With reference briefly to FIG. 6, a key ring 612 is illustrated inserted into aperture 610 of attachment feature 609 for device 600. With reference once more to FIGS. 3A and 3B, attachment feature 309 can be located on an outer surface of connecting portion 305, first arm 301, or second arm 302, or any other suitable location. In various embodiments, a connecting feature need not comprise a protrusion, and instead can comprise an aperture or other feature of device 300 that does not extend from a surface of device 300.

In various embodiments, device 300 can comprise a relief slot 311. Relief slot 311 can be disposed in one of the first arm 301, the second arm 302, and the connecting portion 305. In various embodiments, relief slot 311 may be disposed in more than one portion of device 300. For example and as illustrated, relief slot 311 extends through connecting portion 305 and into proximal portions of first arm 301 and second arm 302. In various embodiments, a relief slot may also serve as an attachment feature. In various embodiments

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and as further described below, a relief slot such as relief slot **311** may be configured to reduce one of the first restoring force and the first spring constant of device **300** as compared to an equivalent device that is not configured with a relief slot.

In various embodiments, a device such as device **300** may be manufactured from a polymer material. Polymer materials that may be used can include, for example, high density polyethylene (HDPE), acrylonitrile butadiene styrene (ABS), polypropylene (PP), polyester (PES), polyethylene terephthalate (PET), polyvinyl chloride (PVC), polyamides (PA) including various nylons, polyethylene/acrylonitrile butadiene styrene (PE/ABS), and polycarbonate (PC), polycarbonate/acrylonitrile butadiene styrene (PC/ABS), as well as various resins or materials compatible with various additive manufacturing processes and/or 3D printers, such as Stratasys PolyJet materials. In various embodiments, a device can comprise natural materials such as wood, bamboo, hemp- or algal-based biopolymers, and the like. Natural materials can be used in a composite material, for example, a wood and adhesive laminate (i.e., plywood). In various embodiments comprising a laminated material, layers may be oriented such that the layer arrangement is visible in a side view. In various embodiments comprising laminate wood or plywood, the grains of the veneers may be configured to permit a suitable level of flexibility and/or a suitable spring constant. Composite materials such as carbon fiber, graphite fiber-, and graphene fiber-reinforced polymers may be used in a device in accordance with various embodiments. Likewise, a device can comprise metals or metal alloys including steel, titanium, chromium, cobalt-chrome, stainless steel, aluminum, and the like.

In various embodiments, a device such as device **300** can comprise a phosphorescent (and/or photoluminescent) material to provide the device with a capacity to glow in dark conditions. For example, a phosphorescent material such as zinc sulfide or strontium aluminate can be incorporated into the device, such as by incorporation into a polymer composite used to manufacture the device or by applying to the device in a coating. Use of phosphorescent material in a device to confer a glow-in-the-dark characteristic can facilitate a user's ability to locate the device under dark conditions.

In various embodiments, a device such as device **300** may be unitarily constructed, such as by injection molding or additive manufacturing as a single component. In various other embodiments, a device can comprise two or more components attached to one another by various mechanical attachment methods including adhesives, welding, fastening, joinery, hinge, or other mechanical attachment. For example and with reference briefly to FIG. 5, device **500** comprises a hinge **520** configured in the connecting portion **505** between first arm **501** and second arm **502**. Any of a variety of hinge configurations may be suitable for use in a device in accordance with various embodiments of the present disclosure. In various embodiments, a hinge or other mechanical attachment can include a spring configured to bias the first arm and the second arm of the device toward an open position suitable to receive a buckle in buckle space **506**.

With reference again to FIGS. 3A and 3B, the illustrated device **300** comprises a unitary construction. Device **300** can be configured to be elastically deformable in one of the first arm **301**, the second arm **302**, and the connecting portion **305**. The elastically deformable configuration of device **300** can provide for movement of button contact surface **308** through a first deflection distance relative to the position of

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the second arm **302** in response to a first deflection force. The device can be configured to produce a first restoring force in response to movement through the first deflection distance biased in a direction opposite the first deflection distance. In various embodiments, the first restoring force can be produced as a function of the spring constant of an elastically deformable material used to fabricate the device, for example, for unitarily constructed devices such as device **300**, in response to movement of the device through the first deflection distance. In various other embodiments, the first restoring force can be produced by a spring or other component of a mechanical connection, such as the hinge mechanism illustrated for device **500** (FIG. 5).

In various embodiments, the first deflection distance can be in a direction toward the second arm. For example and with reference now to FIG. 4, typical buckle housings used for buckle fastening mechanisms may have buckle housing depths of from about 0.75 in to about 1.25 in. A device such as device **400** can be configured such that distance D1 (i.e., the inter-arm dimension) provides for clearance of a typical buckle housing relative to a buckle housing depth dimension, enabling an operator to insert device **400** around a buckle housing without deflection or deformation of the device. The operator may position device **400** relative to the buckle so that button contact feature **407** is positioned over the buckle release button. When device **400** is suitably positioned, the operator may squeeze device **400** to compress the device, engaging button contact surface **408** with the underlying buckle release button as the button contact surface travels through the first deflection distance in response to the first deflection force provided by the operator. In operation, the first deflection distance may be suitable to actuate the buckle release button, releasing the buckle from the latched condition to the unlatched condition. A device may be configured to provide a first deflection distance suitable to produce a sufficient button travel distance for various buckle release buttons. For example, the button travel distance required for actuation of various buckle release buttons can be from about 0.10 in to about 0.40 in. A device may also be configured to provide any additional deflection distance necessary to provide a device with a clearance fit (i.e., the distance between the button contact surface and the button surface). In various embodiments, a device may be configured to provide a first deflection distance within the range of from about 0.10 in to about 1.30 in. In various embodiments, a device can be configured to be compatible with a particular buckle fastening system or with selected buckle fastening systems, and different devices can be configured to operate with different buckle fastening systems. A device in accordance with various embodiments can be configured to provide a first deflection distance sufficient to produce actuation of various buckle release buttons for any buckle fastening system now in existence or that may be produced in the future.

In operation of a device in accordance with the embodiment described above providing a clearance fit relative to a buckle fastening system, an operator must overcome the restoring force produced by the device in response to elastic deformation of the device and movement of the button contact surface through the first deflection distance. In various embodiments, the restoring force and/or spring constant of the device may depend on the configuration of the device, including, for example, the materials, dimensions, and other features of the device. Additionally, in operation of a device in accordance with the embodiment described above, the operator must overcome the force biasing the buckle release button toward the latched posi-

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tion. The restoring force and/or spring constant of a device may depend on the configuration of the device, including the material used, the shape and dimensions of the device, the presence, location, and configuration of features such as a relief slot or a hinge, and the like. In various embodiments, a device can be configured such that the force required to produce a first deflection distance suitable to actuate a buckle release button can be from about 1.0 newtons to about 8.0 newtons. For example, the force required to produce the first deflection distance may be about 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, or about 8.0 newtons. In various embodiments, the force required to produce a first deflection distance suitable to actuate a buckle release button can be produced by a device operator with a grip force that is lower than that of an average population to allow a device to be operated by individuals with various physical conditions that may negatively affect grip force. For example, a grip force required to produce a first deflection distance suitable to actuate a buckle release button can be less than about 50 N, or less than about 40 N, or less than about 30 N, or less than about 25 N, or less than about 20 N, or less than about 15 N, or less than about 10 N. In various embodiments, a device can comprise a relief slot such as relief slot **311** (FIG. 3) that may be configured to provide a reduced first restoring force and/or spring constant as compared to an equivalent device comprising the same material and the same dimensions but lacking the relief slot.

In accordance with various embodiments of the present disclosure, a device can be configured to provide suitable strength and structural rigidity for durability and reliable operation of the device over many buckle release cycles. A device can also be configured to provide a restoring force and/or spring constant during operation of the device to produce a first deflection distance that is sufficiently low that it is not prohibitive to users. For examples, users of a device may have certain physical or medical limitations that present challenges to compression of a buckle release button without the aid of a device as disclosed herein, or to compression of a device such as those disclosed herein that do not include a feature configured to reduce the restoring force and/or spring force constant such as a relief slot or a hinge. A relief slot can be disposed in one of the first arm, the second arm, and the connecting portion. The configuration of a relief slot, including the position and size can be adjusted to "tune" the restoring force and/or spring force constant of a device. For example, a longer or a wider relief slot can produce a decreased spring force constant compared to a shorter or a narrower relief slot.

In various embodiments, a device can be configured with relief areas. A relief area may be provided for various reasons, such as to reduce the amount of material required to manufacture a device and/or to reduce the occurrence of manufacturing irregularities such as sink marks or depressions that may occur in thicker portions of injection molded devices. With reference briefly to FIGS. 8A and 8B, a device **800** with a relief area **850** is illustrated. Relief area **850** is defined by a perimeter wall **851** and an inner wall **852**. Device **800** can comprise a pair of relief areas such as relief area **850** configured on opposite sides of first arm **801**.

In various embodiments, a configuration of a device such as device **400** (FIG. 4) can provide an operator with certain benefits facilitating exertion of sufficient force to produce the first deflection distance. For example, the configuration of the device can provide enhanced ergonomics, such as by providing added surface area by which an operator can exert force on the buckle release button, permitting engagement of

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additional fingers or portions of the operator's hand(s), or by providing a mechanical advantage, such as by extension of the distal ends of the first arm and/or the second arm distally from the connecting portion (i.e., the fulcrum) to produce enhanced leverage (i.e., via a class two lever) with the operator able to exert force distally to the button the load).

In various other embodiments, a device such as device **400** can be configured such that distance **D1** provides for a compression fit around a buckle housing and/or buckle release button. For example, a device can be configured such that distance **D1** is less than a buckle housing depth and/or a distance from the front face of a buckle button in a latched position and the back of the buckle housing. In such an embodiment, insertion of a device around a buckle will produce a first deflection distance resulting in the buckle contact surface moving away from the second arm of the device. A tapered front surface of the button contact feature may facilitate opening of the arms of the device and movement of the buckle contact surface through a first deflection distance in response to contact with a button housing and lateral pressure and movement of the device relative to the buckle housing to produce insertion of the buckle. The first restoring force produced by the device can provide buckle release actuation assistance, with the bias of the device in a direction opposite of that producing the first deflection distance tending to produce depression of a buckle release button when the button contact surface engages the button. In various embodiments, a device can be configured such that the restoring force is sufficient to actuate a buckle release button, or a device can be configured such that the restoring force is sufficient to partially actuate a release button, and further compressive force must be provided by an operator to fully actuate a buckle release button. In such embodiments, the compressive force provided by an operator may be less than that required for an equivalent device configured to provide a clearance fit rather than a compression fit.

In various embodiments, the button contact feature may be configured to engage and/or actuate a buckle release button of one or more buckle fastening systems. For example, the button contact surface may be configured with a length and a width suitable to engage a button surface of one or more buckle fastening systems without interference from a surrounding buckle housing. For example, a button contact surface may be configured with a length and width of about 0.5 in in each dimension, and such a button configuration may be compatible with square or rectangular buttons as well as round, oval, or irregularly shaped buttons with dimensions larger than that of the button contact surface. Likewise, a button contact feature may be configured with a button contact feature height **H** (FIG. 4) suitable to provide actuation of one or more buckle fastening system buttons while preventing contact or interference between the buckle housing and the inner surface of the first arm (i.e., buckle housing clearance) during operation, such as when the button contact feature has moved through a first deflection distance. Moreover, a device may be configured with a buckle space depth **D2** suitable to prevent interference between an inner wall of the connecting portion and the lateral wall of a buckle housing, and/or to provide sufficient space for an operator to insert one or more fingers between the inner wall of the connecting portion and the buckle housing to facilitate removal of the device from the buckle following actuation of the buckle release button. In various embodiments, **D2** can be from about 1.25 in to about 2.5 in.

A device disclosed herein may provide certain advantages, such as reducing pressure transmitted from the buckle

housing to a restrained child or passenger during actuation of the buckle release button due to the laterally-opposed configuration of the first arm and the second arm. In contrast, simple operation of a button by depression with an operator's finger or other prior art tools for pressing a button that lack an opposing arm either transmit pressure through the buckle housing to the person under the buckle housing or require the operator to use his hand or fingers to provide an opposing force. In addition, the devices disclosed herein do not require attachment to the buckle or an associated strap, as required by other prior art devices. Instead, the devices disclosed herein are designed to be removably inserted around a buckle with each use, with the device remaining under the control and supervision of a mature operator, for example, a driver or parent, thereby preventing inadvertent or unsupervised operation by a restrained child or other passenger at inappropriate moments.

In various embodiments, a system that can be used to assist actuation of a buckle release button is provided. A system can comprise a device in accordance with the present disclosure. A system can further comprise an attachment device. The attachment device can be connected to the attachment feature. An attachment device can comprise a ring, a chain, a carabiner, a wire, a cable, a lanyard, a strap, or similar device. An attachment device can be any device suitable to attach the device, for example, to an operator's key set or other similarly accessible and portable accessory.

In various embodiments, a system can comprise a light. A light can be incorporated in a buckle release device. For example and with reference to FIG. 6, a light 630 can be inserted into distal end of first arm 601 of device 600. A light can also be inserted in other locations in a device, such as the second arm or the connecting portion. A system can comprise, for example, an LED flashlight removably inserted into a buckle release device. A system can further comprise a battery for a light inserted into the buckle release device. The device can be configured so that the light and/or battery are removably inserted so that the battery can be replaced as needed. A system can further comprise a switch for operation of a light, such as switch 631. A switch may be co-located with the light and the buckle release device configured to permit access to the switch on the inserted light, or the switch may be located remotely from the light, with wiring or other circuitry running between the light and the switch. A switch may be located in a position that provides for convenient operation of the light during operation of the buckle release device, such as insertion of the buckle release device over a buckle.

In various embodiments, a system can comprise a whistle. A whistle may be attached to a buckle release device or integrated into a buckle release device. A whistle may provide an operator with convenient access to a safety whistle for use in emergency situations.

In various embodiments, a system can comprise a glass breaker. A glass breaker can comprise a pointed steel tip, such as a tungsten carbide tip, attached to the buckle release device. A glass breaker can also comprise an automatic center punch tool, such as a spring loaded automatic center punch. A glass breaker may be attached, for example, at the distal end of the first arm or the second arm or to an outer wall of the connecting portion.

In various embodiments, a system can also comprise a bottle opener. With reference to FIG. 7, a system can comprise a device 700 with a bottle opener 740 located in an outer wall of first arm 701. A system can comprise a device with a bottle opener located in other locations of the device, such as the second arm or the connecting portion.

In various embodiments, a system can comprise a seat belt cutter. A seat belt cutter can be integrated into a buckle release device for use in emergency situations. Referring now to FIGS. 9A and 9B, devices with integrated seat belt cutters are shown. Device 900A illustrated in FIG. 9A includes a seat belt cutter comprising blade 960A embedded in first arm 901A of device 900A with a belt slot 961A opening into the interior of the device. Device 900B illustrated in FIG. 9B includes a seat belt cutter comprising blade 960B with a belt slot 961B opening toward the top of first arm 901B. In operation, a device such as device 900A or 900B comprising a seat belt cutter is positioned such that a seat belt is inserted into the opening of a belt slot such as 961A or 961B, and the device is moved relative to the inserted seat belt such that the blade (e.g., blade 960A or 960B) contacts and cuts the inserted seat belt. In various embodiments, a seat belt cutter may be configured so as to minimize risk of inadvertent contact with clothing or a child or person restrained by a buckle fastening mechanism during use of the buckle release device. For example a seat belt cutter may comprise a removable safety gate that can be opened to expose the seat belt cutter blade and permit insertion of a seat belt into the cutter.

EXAMPLE 1

Non-Destructive Deflection Test Data for Device Prototypes Constructed from ABS and Polypropylene

Prototypes of a device for actuating a buckle release in accordance with various embodiments of the present disclosure were manufactured from acrylonitrile butadiene styrene (ABS) and from polypropylene and subjected to non-destructive testing to determine the pressure required to achieve various deflections of the button contact surface. The results are shown in Table 1.

TABLE 1

Results of non-destructive deflection distance testing.		
Pressure	Polypropylene Deflection	ABS Deflection
0.42 lbs	0.05 in	0.10 in
0.98 lbs	0.16 in	0.24 in
1.40 lbs	0.31 in	0.46 in

For the polypropylene prototype, 1.63 lbs of pressure was required to produce sufficient deflection of the button contact surface to contact the opposite arm (0.56 inches of deflection). For the ABS prototype, 1.74 lbs of pressure was required to produce sufficient deflection of the button contact surface to contact the opposite arm (0.67 inches of deflection).

Benefits, other advantages, and solutions to problems have been described herein with regard to specific embodiments. Furthermore, the connecting lines shown in the various figures contained herein are intended to represent exemplary functional relationships and/or physical couplings between the various elements. It should be noted that many alternative or additional functional relationships or physical connections may be present in a practical system. However, the benefits, advantages, solutions to problems, and any elements that may cause any benefit, advantage, or solution to occur or become more pronounced are not to be construed as critical, required, or essential features or elements of the inventions. The scope of the invention is accordingly to be limited by nothing other than the appended

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claims, in which reference to an element in the singular is not intended to mean “one and only one” unless explicitly so stated, but rather “one or more.” Moreover, where a phrase similar to “at least one of A, B, or C” is used in the claims, it is intended that the phrase be interpreted to mean that A alone may be present in an embodiment, B alone may be present in an embodiment, C alone may be present in an embodiment, or that any combination of the elements A, B and C may be present in a single embodiment; for example, A and B, A and C, B and C, or A and B and C. Different cross-hatching is used throughout the figures to denote different parts but not necessarily to denote the same or different materials.

Devices, systems, and methods are provided herein. It the detailed description herein, references to “one embodiment”, “an embodiment”, “an example embodiment”, etc., indicate that the embodiment described may include a particular feature, structure, or characteristic, but every embodiment may not necessarily include the particular feature, structure, or characteristic. Moreover, such phrases are not necessarily referring to the same embodiment. Further, when a particular feature, structure, or characteristic is described in connection with an embodiment, it is submitted that it is within the knowledge of one skilled in the art to affect such feature, structure, or characteristic in connection with other embodiments whether or not explicitly described. After reading the description, it will be apparent to one skilled in the relevant art(s) how to implement the disclosure in alternative embodiments.

Furthermore, no element, component, or method step in the present disclosure is intended to be dedicated to the public regardless of whether the element, component, or method step is explicitly recited in the claims. No claim element herein is to be construed under the provisions of 35 U.S.C. 112(f), unless the element is expressly recited using the phrase “means for.” As used herein, the terms “comprises”, “comprising”, or any other variation thereof, are intended to cover a non-exclusive inclusion, such that a process, method, article, or apparatus that comprises a list of elements does not include only those elements but may include other elements not expressly listed or inherent to such process, method, article, or apparatus.

What is claimed is:

1. A unitarily constructed device for actuating a buckle release button comprising:

a first arm, wherein the first arm comprises a first end, a button contact feature comprising a rectangular cross section and a button contact surface, and a first arm inner surface defining a first arm inner surface plane, and wherein the first arm defines a first axis;

a second arm, wherein the second arm comprises a second end and a second arm inner surface defining a second arm inner surface plane that is substantially parallel to the first arm inner surface plane, and wherein the second arm defines a second axis substantially parallel to the first axis;

a connecting portion disposed between the first arm and the second arm, wherein the connecting portion comprises a U-shape configured to dispose the first arm and the second arm in a laterally-opposed position; and an attachment feature disposed on the connecting portion.

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2. The device of claim 1, wherein the device is configured to be elastically deformable in one of the first arm, the second arm, and the connecting portion to provide for movement of the button contact surface through a first deflection distance in response to a first deflection force, and wherein the device is configured to produce a first restoring force in response to the movement through the first deflection distance.

3. The device of claim 2, wherein the device comprises a first spring constant.

4. The device of claim 3, wherein the device comprises a relief slot disposed in the connecting portion.

5. The device of claim 2, wherein the first deflection distance is sufficient to actuate a buckle release button.

6. The device of claim 2, wherein the button contact feature comprises a button contact feature height, and wherein the button contact feature height is configured to provide buckle housing clearance at the first deflection distance.

7. The device of claim 2, wherein the device comprises an inter-arm dimension.

8. The device of claim 7, wherein the inter-arm dimension is configured to provide a clearance fit with respect to a buckle housing.

9. The device of claim 7, wherein the inter-arm dimension is configured to provide a compression fit with respect to a buckle release button.

10. The device of claim 9, wherein insertion of a buckle into the device produces the first deflection force, and wherein the first restoring force produced by the device provides a buckle release actuation assistance.

11. A system comprising:

a buckle release device; and
an attachment device;

wherein the buckle release device comprises:

a first arm connected to a second arm by a U-shaped connecting portion, the device having a unitary construction with each of the first arm, the second arm, and the connecting portion comprising a rectangular cross section, the first arm comprising a first arm inner surface defining a first plane and a first arm outer surface defining a second plane, the second arm comprising a second arm inner surface defining a third plane and a second arm outer surface defining a fourth plane, the first plane, second plane, third plane, and fourth plane being substantially parallel to one another, the first arm inner surface being continuous with the second arm inner surface, and the first arm outer surface being continuous with the second arm outer surface, and

an attachment feature configured to receive the attachment device; and

wherein the attachment device is inserted into the attachment feature.

12. The system of claim 11, wherein the attachment device is one of a key ring, a carabiner, a steel cable loop, a chain, a wire, and a lanyard.

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(12) **United States Patent**
Riley-Carter et al.

(10) **Patent No.:** **US 10,342,298 B2**
(45) **Date of Patent:** ***Jul. 9, 2019**

(54) **DEVICE AND SYSTEM FOR ASSISTING
ACTUATION OF A BUCKLE RELEASE**

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A44B 11/2511 (2013.01); **A44B 15/005**
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2002/2818 (2013.01)

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B29C 66/8614; A44B 11/2546; A44B
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B60N 2002/2815; Y10T 29/53943
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,879,806 A * 11/1989 Feng H05K 13/0491
29/741
5,050,277 A * 9/1991 Jimenez A44B 11/2511
24/633
5,282,737 A 2/1994 Ray
5,666,865 A * 9/1997 Ito H01H 85/0208
29/278

(Continued)

OTHER PUBLICATIONS

Barbara Heilman and Becca Davison, UnbuckleMe product, <https://unbuckleme.com/>.

(Continued)

Primary Examiner — Robert Sandy

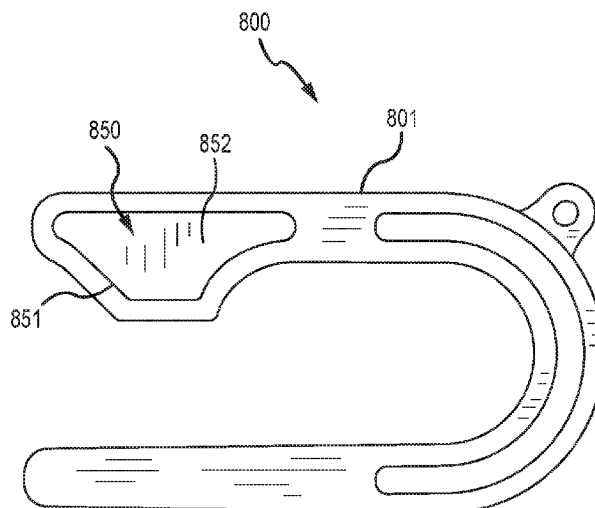
Assistant Examiner — Michael S Lee

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(57) **ABSTRACT**

A device and system that can be used to assist actuation of a buckle release is disclosed. A device can comprise a first arm and a second arm joined by a U-shaped connecting portion. The device can also comprise a button contact feature. The device can be inserted over a buckle with the button contact feature over a buckle release button, and the device used to assist engagement of the buckle release button by a person operating the device. A system can comprise a device and various additional features or accessories.

14 Claims, 11 Drawing Sheets



US 10,342,298 B2

Page 2

(56)

References Cited

U.S. PATENT DOCUMENTS

7,384,086	B2	6/2008	Lukaszynski et al.	
8,539,862	B1	9/2013	Robinson	
2011/0308057	A1 *	12/2011	Abrams	B25B 7/02 29/426,5
2016/0166014	A1 *	6/2016	Soenen	A44B 11/2526 24/639
2018/0071902	A1	3/2018	Davison et al.	
2018/0132571	A1 *	5/2018	Lambarth	A44B 11/2526

OTHER PUBLICATIONS

CSC Solutions LLC, Bucklebee product, <http://www.bucklebee.com/>.

Marlene Robinson, BuckleBopper product, <https://bucklebopper.com/>.

Mathiowetz et al., "Grip and Pitch Strength: Normative Data for Adults," Arch. Phys. Med. Rehabil., vol. 66, pp. 69-74 (1985).

U.S. Appl. No. 62/394,080, filed Sep. 13, 2016.

* cited by examiner

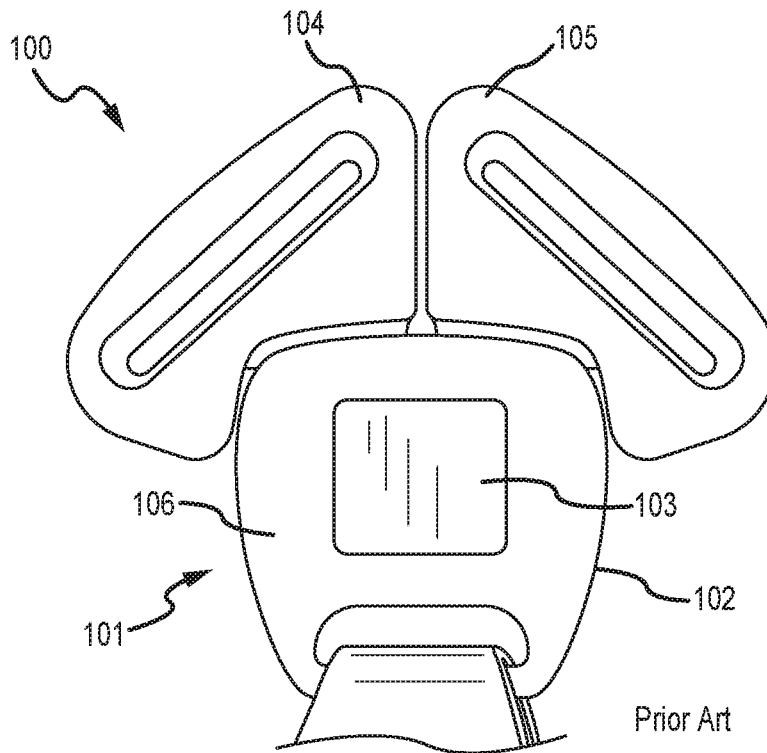


FIG. 1A

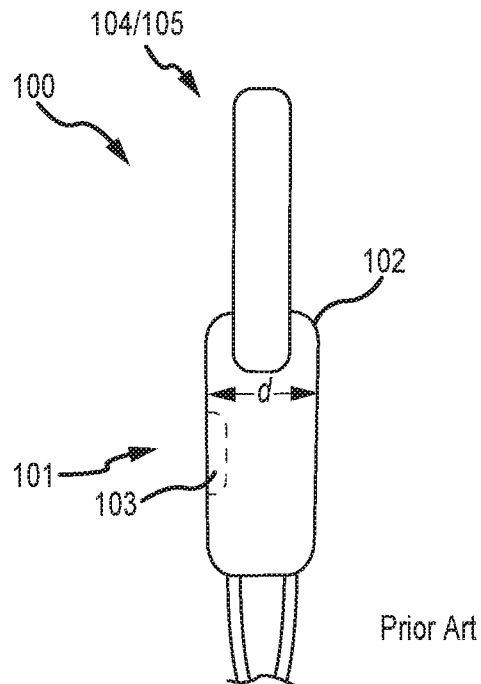


FIG. 1B

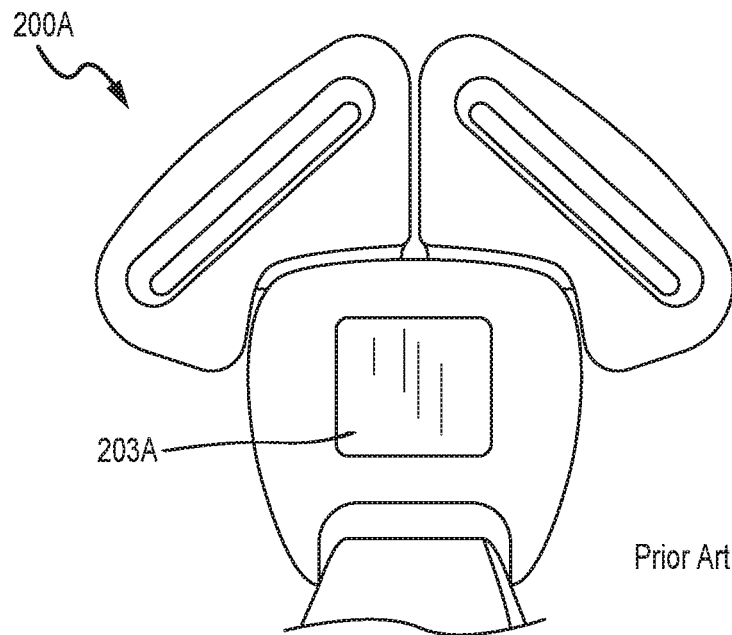


FIG. 2A

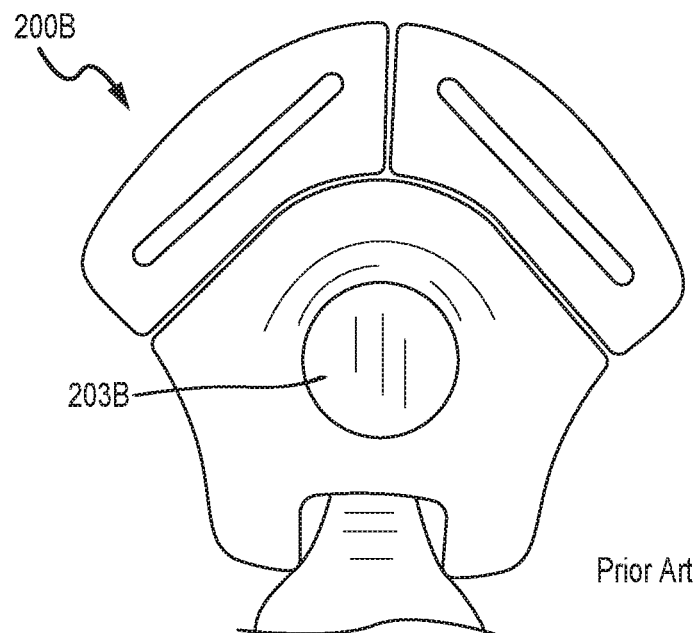


FIG. 2B

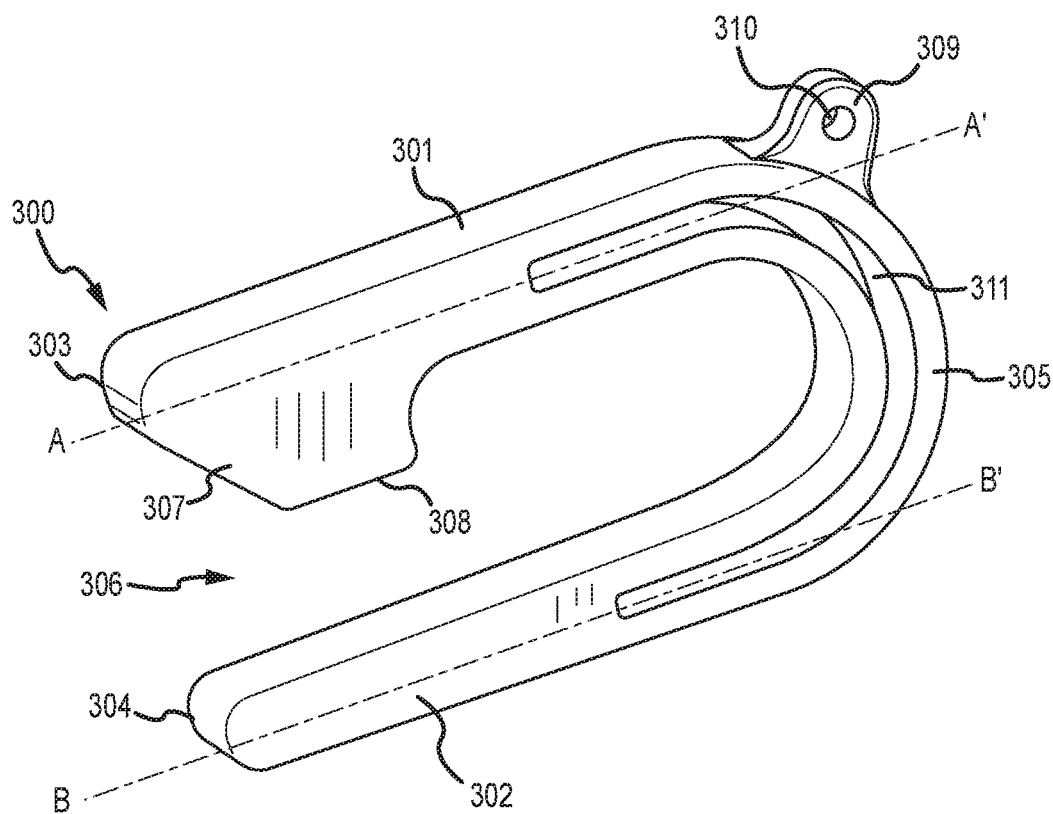


FIG.3A

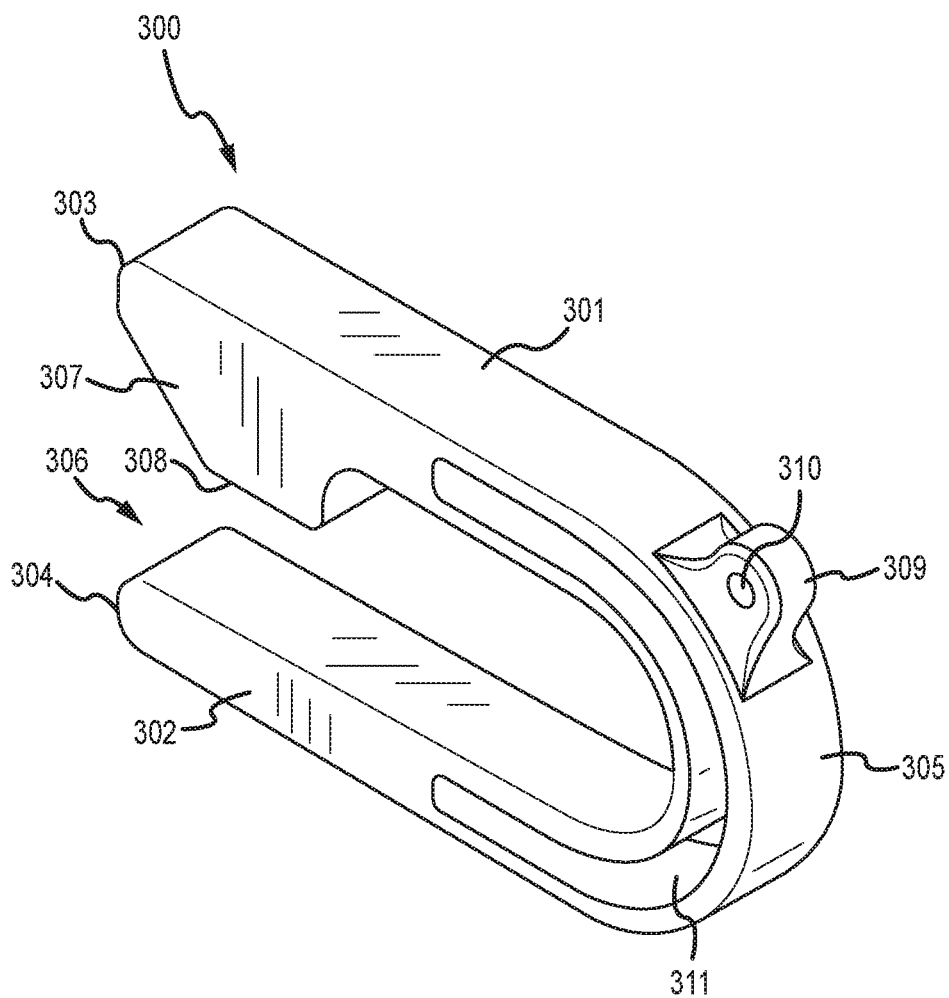


FIG.3B

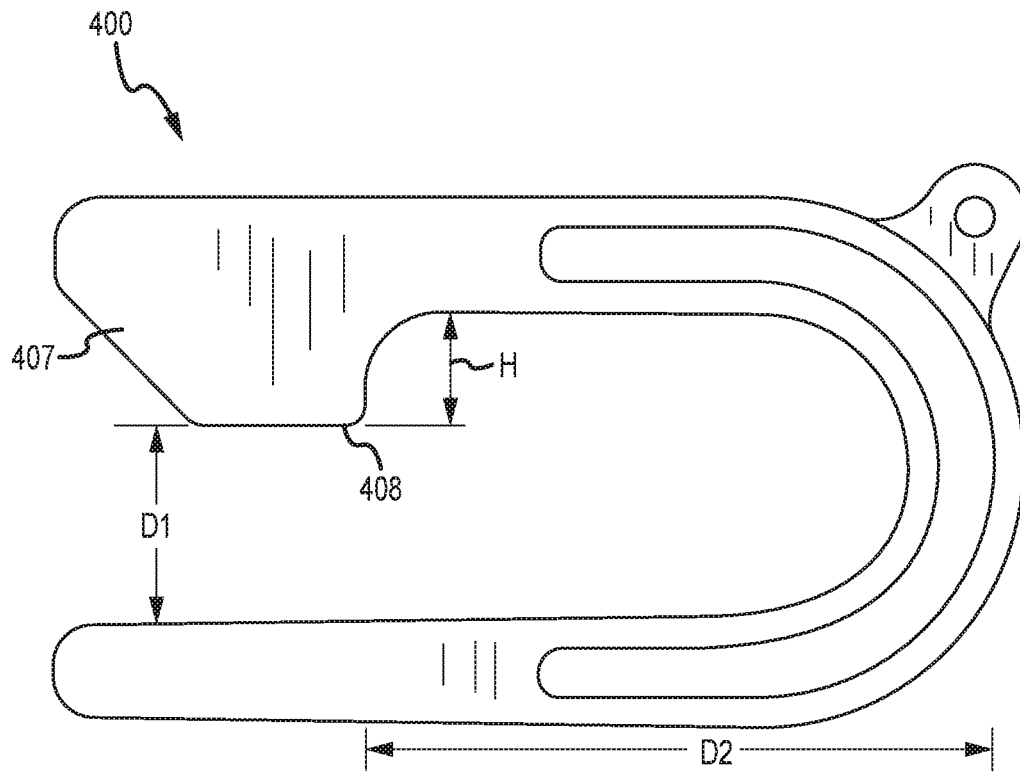


FIG.4

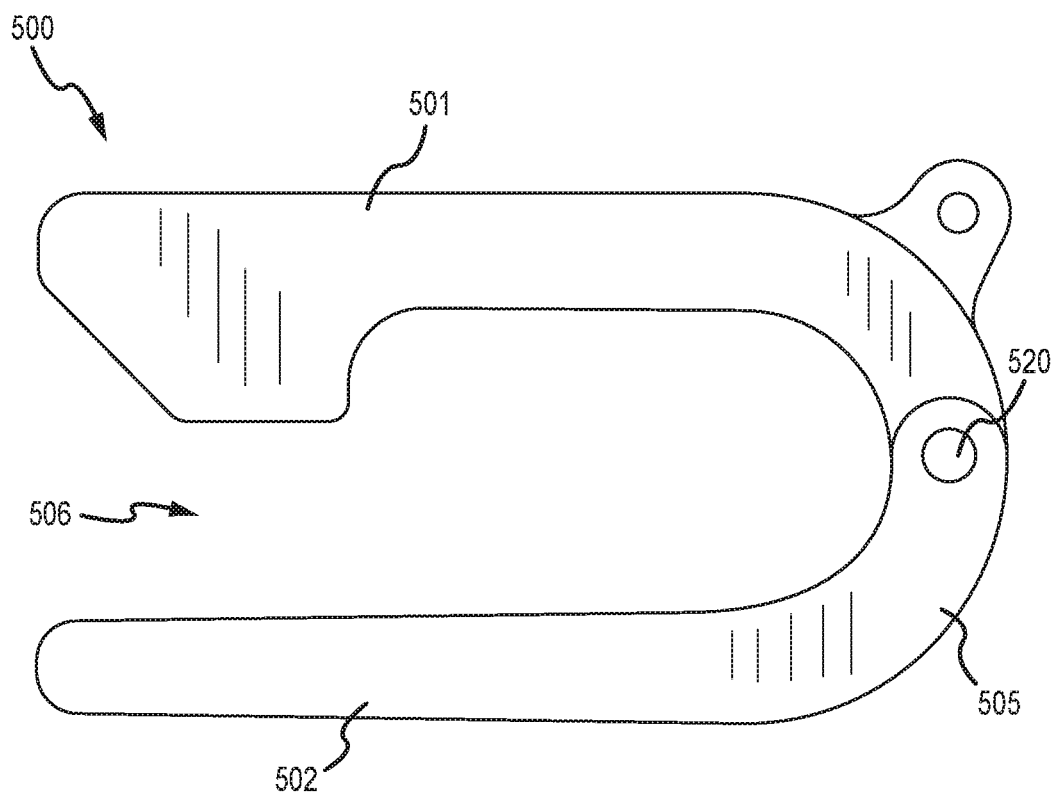


FIG. 5

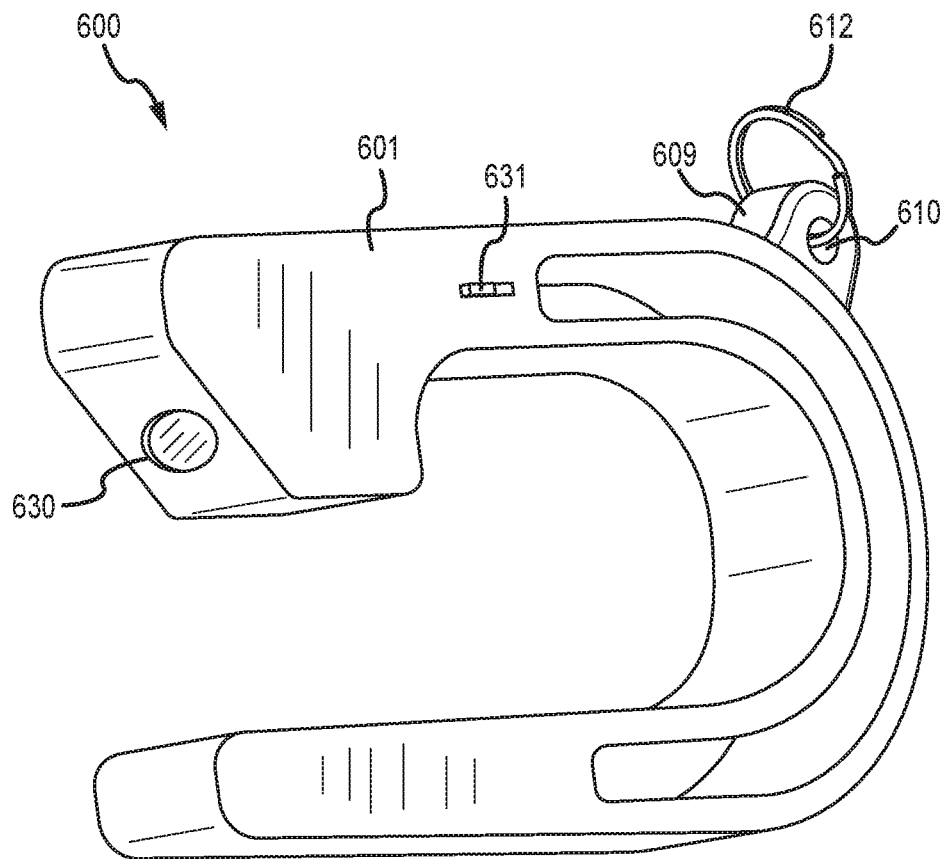


FIG. 6

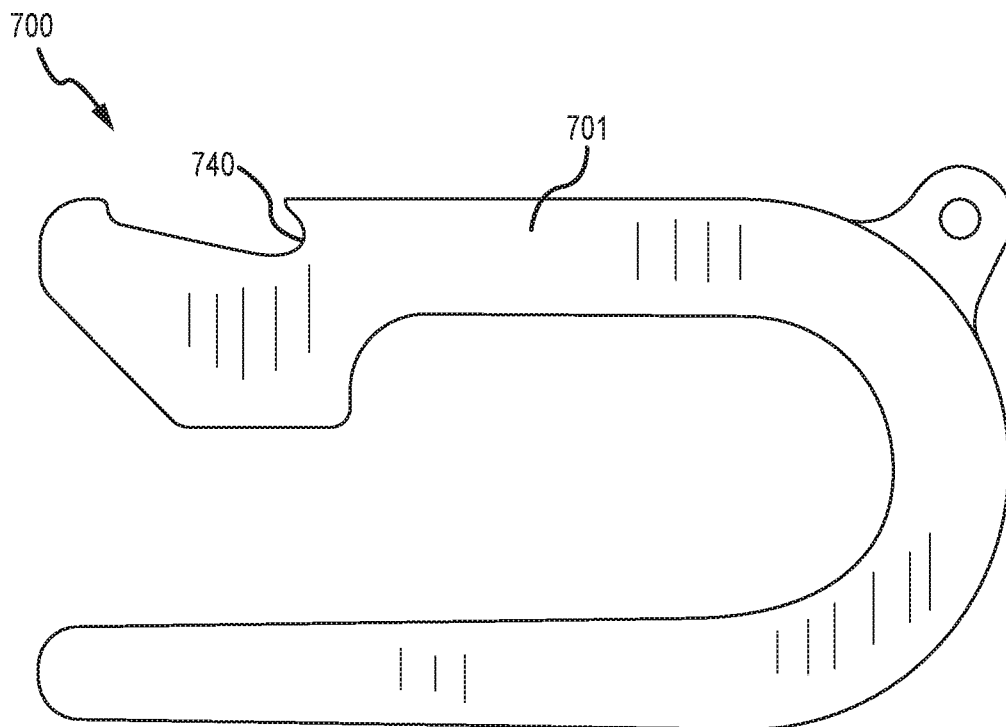


FIG. 7

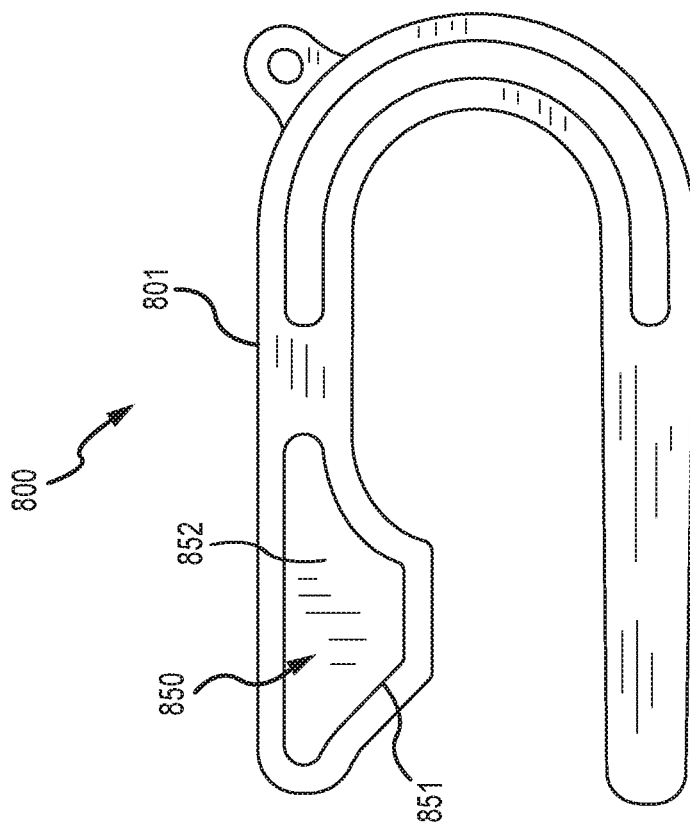


FIG. 8A

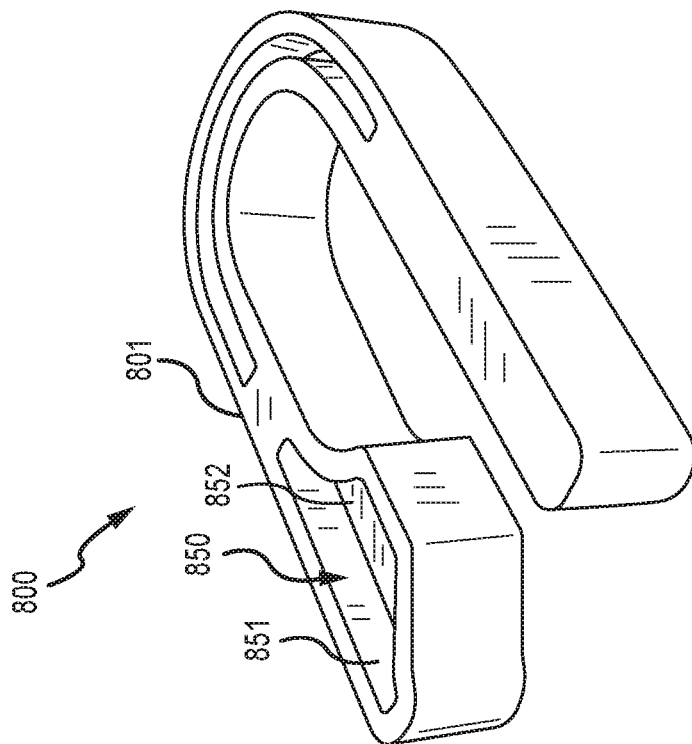


FIG. 8B

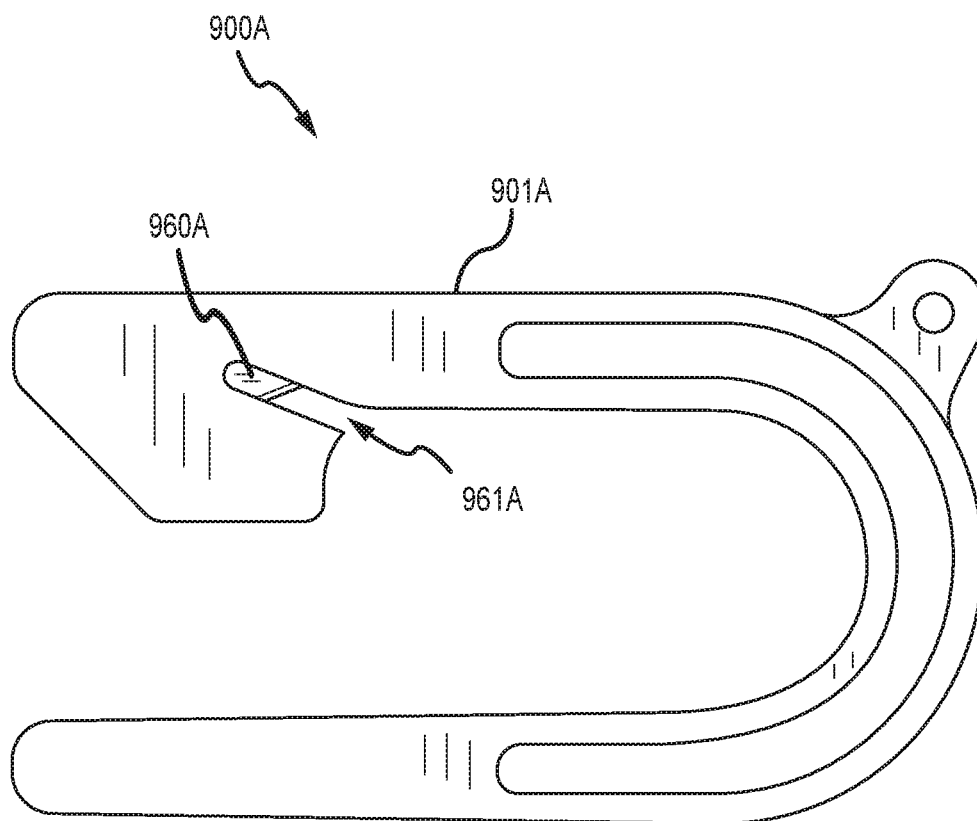


FIG.9A

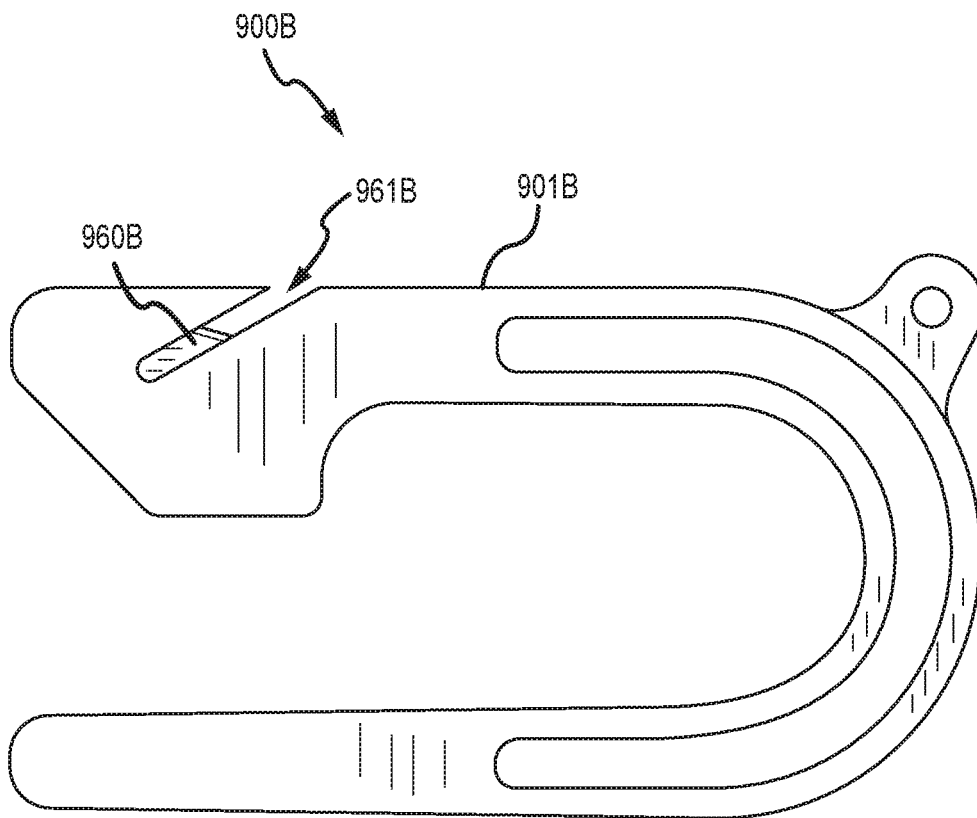


FIG. 9B

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**DEVICE AND SYSTEM FOR ASSISTING
ACTUATION OF A BUCKLE RELEASE****CROSS-REFERENCE TO RELATED
APPLICATIONS**

This application is a Continuation of U.S. application Ser. No. 15/799,911 entitled "DEVICE AND SYSTEM FOR ASSISTING ACTUATION OF A BUCKLE RELEASE," filed on Oct. 31, 2017, which application claims the benefit of and priority to U.S. Provisional Application Ser. No. 62/415,407, entitled "DEVICE AND SYSTEM FOR ASSISTING ACTUATION OF A BUCKLE RELEASE," filed on Oct. 31, 2016. The entire disclosures of the aforementioned applications are incorporated herein by reference for any purpose.

FIELD

The present disclosure relates to a device and system for actuation of a buckle release. In particular, the disclosure relates to a device and system that can be used to assist actuation of buckle release buttons in restraint system buckles.

BACKGROUND

Restraint systems such as child safety seats used in automobiles as well as restraint systems used in other settings frequently include a buckle-type fastening mechanism to secure two or more portions of the restraint system around a restraint system occupant. A buckle-type fastening mechanism generally includes a buckle attached to an end of a first section of restraint system belting and a tongue or latchplate portion attached to a second section of restraint system belting. The tongue is inserted into the buckle where it is releasably latched to secure the first and second sections of restraint system belting. Child safety seats frequently include a third section of belting with a second tongue that is inserted into the buckle adjacent to the first tongue, with both tongues being secured by the buckle.

A buckle generally comprises a housing containing a spring-loaded latching mechanism for releasably latching the tongue or tongues within the buckle. A typical buckle housing comprises an aperture containing an actuating button for operating and releasing the latching mechanism. A spring in the latching mechanism exerts a bias urging the button and/or latching mechanism toward the latched position. The button can be operated by depressing the button using a thumb or fingertip against the bias of the spring with sufficient pressure to overcome the spring force of the latching mechanism and move the button and mechanism from the latched position to a release position, thereby causing the latching mechanism to release the tongue(s) from the latched condition. In a typical buckle, the area of the actuating button approximates or is configured to be pressed by a person's thumb or fingertip. The surface of the actuating button against which the thumb or fingertip presses is generally flush with or recessed from the surface of the housing surrounding the button.

A prior art buckle fastening system **100** is illustrated in FIGS. **1A** and **1B**. Buckle fastening system **100** includes buckle **101** comprising buckle housing **102** and buckle release button **103**. Buckle fastening system **100** also includes first and second tongues **104** and **105**. Buckle housing **102** has a depth **d**. Buckle housing **102** further includes a button surround **106** defining an opening in the

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front face of the buckle that defines the opening for buckle release button **103**. Buckle release buttons can be configured in a variety of shapes, including the square and circular buttons **203A** and **203B** of prior art buckle fastening systems **200A** and **200B** illustrated in FIGS. **2A** and **2B**, respectively, as well as various other geometric and irregular shapes.

Buckle fastening systems such as those described above can be inconvenient or challenging for certain people to operate for various reasons, including individual variability in hand and finger size and strength, certain physical or medical conditions such as tendonitis and arthritis, and the like. Likewise, the force required for actuation of buckle releases used for certain car seat models can be relatively high, creating discomfort, pain, or fatigue for users, for example, that may be required to operate such a buckle on a frequent basis in various circumstances. Devices and systems that can be used to assist actuation of buckle releases are desirable.

The present disclosure provides devices and systems that can be used to assist actuation of a restraint system buckle release button.

SUMMARY

In various embodiments, a device for actuating a buckle release button can comprise a first arm, a second arm, and a connecting portion disposed between the first arm and the second arm. A first arm can comprise a first end and a button contact feature with a button contact surface. The first arm can define a first axis, and the second arm can define a second axis. The connecting portion can comprise a U-shape, and the first arm and the second arm can comprise a laterally-opposed configuration. A device for actuating a buckle release button can comprise an attachment feature. A device can have a unitary construction and can comprise a polymer material. A device can be configured to be elastically deformable in one of the first arm, the second arm, and the connecting portion to provide for movement of the button contact surface through a first deflection distance in response to a first deflection force. A device can be configured to provide a first restoring force in response to the movement through the first deflection distance. A device can comprise a first spring constant. A device can comprise a relief slot. A relief slot can be disposed in one of the first arm, the second arm, and the connecting portion of a device. A relief slot can provide for one of a reduced first restoring force and a reduced first spring constant relative to an equivalent device lacking a relief slot.

A first deflection distance can be sufficient to actuate a buckle release device. A button contact feature can comprise a button contact feature height. The button contact feature height can be configured to provide buckle housing clearance at the first deflection distance. A device can comprise an inter-arm dimension. In various embodiments, an inter-arm dimension can be configured to provide a clearance fit with respect to a buckle housing. In various embodiments, an inter-arm dimension can be configured to provide a compression fit with respect to a buckle release button. Insertion of a buckle into a device configured to provide a compression fit with respect a buckle release button can produce a first deflection force, and the first restoring force produced by the device in response to the first deflection force can provide buckle release actuation assistance.

In various embodiments, a system for actuating a buckle release is provided. A system can comprise a buckle release device and an attachment device. A buckle release device can comprise an attachment feature configured to receive an

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attachment device. The attachment device can be inserted into the attachment feature and can be removably attached to the attachment feature. An attachment device can comprise one of a key ring, a carabiner, a steel cable loop, a chain, a wire, and a lanyard. A system in accordance with various embodiments can comprise one of a flashlight and a seat belt cutter.

BRIEF DESCRIPTION OF THE DRAWINGS

The subject matter of the present disclosure is particularly pointed out and distinctly claimed in the concluding portion of the specification. A more complete understanding of the present disclosure, however, may best be obtained by referring to the detailed description and claims when considered in connection with the drawing figures.

FIGS. 1A and 1B illustrate front and side views of a prior art buckle fastening system, respectively;

FIGS. 2A and 2B illustrate prior art buckle fastening systems having different buckle release button shapes;

FIGS. 3A and 3B illustrate perspective views of a device for actuating a buckle release button in accordance with various embodiments;

FIG. 4 illustrates a side view of a device for actuating a buckle release button in accordance with various embodiments;

FIG. 5 illustrates a side view of a device for actuating a buckle release button in accordance with various embodiments;

FIG. 6 illustrates a front perspective view of a device for actuating a buckle release button in accordance with various embodiments;

FIG. 7 illustrates a side view of a device for actuating a buckle release button in accordance with various embodiments;

FIGS. 8A and 8B illustrate side and perspective views of a device for actuating a buckle release button in accordance with various embodiments; and

FIGS. 9A and 9B illustrate side views of devices for actuating a buckle release button that include a belt cutter in accordance with various embodiments.

DETAILED DESCRIPTION

The detailed description of exemplary embodiments herein makes reference to the accompanying drawings, which show exemplary embodiments by way of illustration and their best mode. While these exemplary embodiments are described in sufficient detail to enable those skilled in the art to practice the inventions, it should be understood that other embodiments may be realized and that logical and mechanical changes may be made without departing from the spirit and scope of the inventions. Thus, the detailed description herein is presented for purposes of illustration only and not of limitation. For example, the steps recited in any of the method or process descriptions may be executed in any order and are not necessarily limited to the order presented. Furthermore, any reference to singular includes plural embodiments, and any reference to more than one component or step may include a singular embodiment or step. Also, any reference to attached, fixed, connected or the like may include permanent, removable, temporary, partial, full and/or any other possible attachment option. Additionally, any reference to without contact (or similar phrases) may also include reduced contact or minimal contact.

As used herein, the term “actuate” means to cause a device to operate, such as a fastening mechanism release.

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As used herein, the term “spring constant” means an approximation of a factor characteristic of an elastically deformable material in a particular configuration within the elastic limits of the material in the configuration.

As used herein, the term “unitary construction” means constructed of a single piece of material.

With reference to FIGS. 3A and 3B, a device 300 is illustrated. As described herein, device 300 can be used to assist actuation of a buckle fastening system. In accordance with various embodiments, device 300 can comprise a first arm 301, a second arm 302, and a connecting portion 305 disposed between the first arm and the second arm. First arm 301 can have an elongated configuration and define a first axis A-A', and second arm 302 can have an elongated configuration and defines a second axis B-B'. In various embodiments, a first arm, second arm, and/or connecting portion can have a square or rectangular cross section, or they can have a circular, ellipsoid, or other geometric or on-geometric cross section. Device 300 can be configured such that first arm 301 and second arm 302 comprise a laterally-opposed configuration, as illustrated, with distal end 303 of first arm 301 and distal end 304 of second arm 302 configured opposite one another. Connecting portion 305 can comprise a U-shaped segment joining the proximal ends of first arm 301 and second arm 302. In various embodiments, axes A-A' and B-B' of a device such as device 300 can be substantially aligned with one another, or the axes may converge or diverge from the distal ends of the first and second arms to the proximal portion of the arms. In various embodiments, a connecting portion can have other configurations or profiles, such as a rectangular profile or any other profile suitable to provide a first device arm and a second device arm in a laterally-opposed configuration.

First arm 301 and second arm 302 can define a buckle space 306 between the interior surfaces of the arms. Device 300 can comprise a button contact feature 307 extending into the buckle space 306 from the interior surface of first arm 301. Button contact feature 307 can comprise a button contact surface 308 facing toward second arm 302. Button contact feature 307 may be located near the distal end of first arm 301. In various embodiments, first arm 301 may extend distally past the location of button contact feature 307. Button contact feature 307 and button contact surface 308 can be configured to operatively engage a buckle fastening system button, as described in greater detail below.

In various embodiments, device 300 can comprise an attachment feature 309. An attachment feature such as attachment feature 309 can comprise a flange or protrusion configured to facilitate attachment of device 300 to a set of keys, for example, by using an attachment device such as a key ring, carabiner, a steel cable loop, a chain, a wire, or a lanyard. Attachment feature 309 can comprise an aperture 310 through which an attachment device can be inserted. With reference briefly to FIG. 6, a key ring 612 is illustrated inserted into aperture 610 of attachment feature 609 for device 600. With reference once more to FIGS. 3A and 3B, attachment feature 309 can be located on an outer surface of connecting portion 305, first arm 301, or second arm 302, or any other suitable location. In various embodiments, a connecting feature need not comprise a protrusion, and instead can comprise an aperture or other feature of device 300 that does not extend from a surface of device 300.

In various embodiments, device 300 can comprise a relief slot 311. Relief slot 311 can be disposed in one of the first arm 301, the second arm 302, and the connecting portion 305. In various embodiments, relief slot 311 may be disposed in more than one portion of device 300. For example

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and as illustrated, relief slot **311** extends through connecting portion **305** and into proximal portions of first arm **301** and second arm **302**. In various embodiments, a relief slot may also serve as an attachment feature. In various embodiments and as further described below, a relief slot such as relief slot **311** may be configured to reduce one of the first restoring force and the first spring constant of device **300** as compared to an equivalent device at is not configured with a relief slot.

In various embodiments, a device such as device **300** may be manufactured from a polymer material. Polymer materials that may be used can include, for example, high density polyethylene (HDPE), acrylonitrile butadiene styrene (ABS), polypropylene (PP), polyester (PES), polyethylene terephthalate (PET), polyvinyl chloride (PVC), polyamides (PA) including various nylons, polyethylene/acrylonitrile butadiene styrene (PE/ABS), and polycarbonate (PC), polycarbonate/acrylonitrile butadiene styrene (PC/ABS), as well as various resins or materials compatible with various additive manufacturing processes and/or 3D printers, such as Stratasys PolyJet materials. In various embodiments, a device can comprise natural materials such as wood, bamboo, hemp- or algal-based biopolymers, and the like. Natural materials can be used in a composite material, for example, a wood and adhesive laminate plywood). In various embodiments comprising a laminated material, layers may be oriented such that the layer arrangement is visible in a side view. In various embodiments comprising laminate wood or plywood, the grains of the veneers may be configured to permit a suitable level of flexibility and/or a suitable spring constant. Composite materials such as carbon fiber-, graphite fiber-, and graphene fiber-reinforced polymers may be used in a device in accordance with various embodiments. Likewise, a device can comprise metals or metal alloys including steel, titanium, chromium, cobalt-chrome, stainless steel, aluminum, and the like.

In various embodiments, a device such as device **300** can comprise a phosphorescent (and/or photoluminescent) material to provide the device with a capacity to glow in dark conditions. For example, a phosphorescent material such as zinc sulfide or strontium aluminate can be incorporated into the device, such as by incorporation into a polymer composite used to manufacture the device or by applying to the device in a coating. Use of phosphorescent material in a device to confer a glow-in-the-dark characteristic can facilitate a user's ability to locate the device under dark conditions.

In various embodiments, a device such as device **300** may be unitarily constructed, such as by injection molding or additive manufacturing as a single component. In various other embodiments, a device can comprise two or more components attached to one another by various mechanical attachment methods including adhesives, welding, fastening, joinery, hinge, or other mechanical attachment. For example and with reference briefly to FIG. 5, device **500** comprises a hinge **520** configured in the connecting portion **505** between first arm **501** and second arm **502**. Any of a variety of hinge configurations may be suitable for use in a device in accordance with various embodiments of the present disclosure. In various embodiments, a hinge or other mechanical attachment can include a spring configured to bias the first arm and the second arm of the device toward an open position suitable to receive a buckle in buckle space **506**.

With reference again to FIGS. 3A and 3B, the illustrated device **300** comprises a unitary construction. Device **300** can be configured to be elastically deformable in one of the first arm **301**, the second arm **302**, and the connecting portion

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305. The elastically deformable configuration of device **300** can provide for movement of button contact surface **308** through a first deflection distance relative to the position of the second arm **302** in response to a first deflection force. The device can be configured to produce a first restoring force in response to movement through the first deflection distance biased in a direction opposite the first deflection distance. In various embodiments, the first restoring force can be produced as a function of the spring constant of an elastically deformable material used to fabricate the device, for example, for unitarily constructed devices such as device **300**, in response to movement of the device through the first deflection distance. In various other embodiments, the first restoring force can be produced by a spring or other component of a mechanical connection, such as the hinge mechanism illustrated for device **500** (FIG. 5).

In various embodiments, the first deflection distance can be in a direction toward the second arm. For example and with reference now to FIG. 4, typical buckle housings used for buckle fastening mechanisms may have buckle housing depths of from about 0.75 in to about 1.25 in. A device such as device **400** can be configured such that distance D1 (i.e., the inter-arm dimension) provides for clearance of a typical buckle housing relative to a buckle housing depth dimension, enabling an operator to insert device **400** around a buckle housing without deflection or deformation of the device. The operator may position device **400** relative to the buckle so that button contact feature **407** is positioned over the buckle release button. When device **400** is suitably positioned, the operator may squeeze device **400** to compress the device, engaging button contact surface **408** with the underlying buckle release button as the button contact surface travels through the first deflection distance in response to the first deflection force provided by the operator. In operation, the first deflection distance may be suitable to actuate the buckle release button, releasing the buckle from the latched condition to the unlatched condition. A device may be configured to provide a first deflection distance suitable to produce a sufficient button travel distance for various buckle release buttons. For example, the button travel distance required for actuation of various buckle release buttons can be from about 0.10 in to about 0.40 in. A device may also be configured to provide any additional deflection distance necessary to provide a device with a clearance fit (i.e., the distance between the button contact surface and the button surface). In various embodiments, a device may be configured to provide a first deflection distance within the range of from about 0.10 in to about 1.30 in. In various embodiments, a device can be configured to be compatible with a particular buckle fastening system or with selected buckle fastening systems, and different devices can be figured to operate with different buckle fastening systems. A device in accordance with various embodiments can be configured to provide a first deflection distance sufficient to produce actuation of various buckle release buttons for any buckle fastening system no existence or that may be produced in the future.

In operation of a device in accordance with the embodiment described above providing a clearance fit relative to a buckle fastening system, an operator must overcome the restoring force produced by the device in response to elastic deformation of the device and movement of the button contact surface through the first deflection distance. In various embodiments, the restoring force and/or spring constant of the device may depend on the configuration of the device, including, for example, the materials, dimensions, and other features of the device. Additionally, in

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operation of a device in accordance with the embodiment described above, the operator must overcome the force biasing the buckle release button toward the latched position. The restoring force and/or spring constant of a device may depend on the configuration of the device, including the material used, the shape and dimensions of the device, the presence, location, and configuration of features such as a relief slot or a hinge, and the like. In various embodiments, a device can be configured such that the force required to produce a first deflection distance suitable to actuate a buckle release button can be from about 1.0 newtons to about 8.0 newtons. For example, the force required to produce the first deflection distance may be about 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, or about 8.0 newtons. In various embodiments, the force required to produce a first deflection distance suitable to actuate a buckle release button can be produced by a device operator with a grip force that is lower than that of an average population to allow a device to be operated by individuals with various physical conditions that may negatively affect grip force. For example, a grip force required to produce a first deflection distance suitable to actuate a buckle release button can be less than about 50 N, or less than about 40 N, or less than about 30 N, or less than about 25 N, or less than about 20 N, or less than about 15 N, or less than about 10 N. In various embodiments, a device can comprise a relief slot such as relief slot **311** (FIG. **3**) that may be configured to provide a reduced first restoring force and/or spring constant as compared to an equivalent device comprising the same material and the same dimensions but lacking the relief slot.

In accordance with various embodiments of the present disclosure, a device can be configured to provide suitable strength and structural rigidity for durability and reliable operation of the device over many buckle release cycles. A device can also be configured to provide a restoring force and/or spring constant during operation of the device to produce a first deflection distance that is sufficiently low that it is not prohibitive to users. For examples, users of a device may have certain physical or medical limitations that present challenges to compression of a buckle release button without the aid of a device as disclosed herein, or to compression of a device such as those disclosed herein that do not include a feature configured to reduce the restoring force and/or spring force constant such as a relief slot or a hinge. A relief slot can be disposed in one of the first arm, the second arm, and the connecting portion. The configuration of a relief slot, including the position and size can be adjusted to "tune" the restoring force and/or spring force constant of a device. For example, a longer or a wider relief slot can produce a decreased spring force constant compared to a shorter or a narrower relief slot.

In various embodiments, a device can be configured with relief areas. A relief area may be provided for various reasons, such as to reduce the amount of material required to manufacture a device and/or to reduce the occurrence of manufacturing irregularities such as sink marks or depressions that may occur in thicker portions of injection molded devices. With reference briefly to FIGS. **8A** and **8B**, a device **800** with a relief area **850** is illustrated. Relief area **850** is defined by a perimeter wall **851** and an inner wall **852**. Device **800** can comprise a pair of relief areas such as relief area **850** configured on opposite sides of first arm **801**.

In various embodiments, a configuration of a device such as device **400** (FIG. **4**) can provide an operator with certain benefits facilitating exertion of sufficient force to produce the first deflection distance. For example, the configuration

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of the device can provide enhanced ergonomics, such as by providing added surface area by which an operator can exert force on the buckle release button, permitting engagement of additional fingers or portions of the operator's hand(s), or by providing a mechanical advantage, such as by extension of the distal ends of the first arm and/or the second arm distally from the connecting portion (i.e., the fulcrum) to produce enhanced leverage (i.e., via a class two lever) with the operator able to exert force distally to the button (i.e., the load).

In various other embodiments, a device such as device **400** can be configured such that distance **D1** provides for a compression fit around a buckle housing and/or buckle release button. For example, a device can be configured such that distance **D1** is less than a buckle housing depth and/or a distance from the front face of a buckle button in a latched position and the back of the buckle housing. In such an embodiment, insertion of a device around a buckle will produce a first deflection distance resulting in the buckle contact surface moving away from the second arm of the device. A tapered front surface of the button contact feature may facilitate opening of the arms of the device and movement of the buckle contact surface through a first deflection distance in response to contact with a button housing and lateral pressure and movement of the device relative to the buckle housing to produce insertion of the buckle. The first restoring force produced by the device can provide buckle release actuation assistance, with the bias of the device in a direction opposite of that producing the first deflection distance tending to produce depression of a buckle release button when the button contact surface engages the button. In various embodiments, a device can be configured such that the restoring force is sufficient to actuate a buckle release button, or a device can be configured such that the restoring force is sufficient partially actuate a release button, and further compressive force must be provided by an operator to fully actuate a buckle release button. In such embodiments, the compressive force provided by an operator may be less than that required for an equivalent device configured to provide a clearance fit rather than a compression fit.

In various embodiments, the button contact feature may be configured to engage and/or actuate a buckle release button of one or more buckle fastening systems. For example, the button contact surface may be configured with a length and a width suitable to engage a button surface of one or more buckle fastening systems without interference from a surrounding buckle housing. For example, a button contact surface may be configured with a length and width of about 0.5 in in each dimension, and such a button configuration may be compatible with square or rectangular buttons as well as round, oval, or irregularly shaped buttons with dimensions larger than that of the button contact surface. Likewise, a button contact feature may be configured with a button contact feature height **H** (FIG. **4**) suitable to provide actuation of one or more buckle fastening system buttons while preventing contact or interference between the buckle housing and the inner surface of the first arm (i.e., buckle housing clearance) during operation, such as when the button contact feature has moved through a first deflection distance. Moreover, a device may be configured with a buckle space depth **D2** suitable to prevent interference between an inner wall of the connecting portion and the lateral wall of a buckle housing, and/or to provide sufficient space for an operator to insert one or more fingers between the inner wall of the connecting portion and the buckle housing to facilitate removal of the device from the buckle

following actuation of the buckle release button. In various embodiments, D2 can be from about 1.25 in to about 2.5 in.

A device disclosed herein may provide certain advantages, such as reducing pressure transmitted from the buckle housing to a restrained child or passenger during actuation of the buckle release button due to the laterally-opposed configuration of the first arm and the second arm. In contrast, simple operation of a button by depression with an operator's finger or other prior art tools for pressing a button that lack an opposing arm either transmit pressure through the buckle housing to the person under the buckle housing or require the operator to use his hand or fingers to provide an opposing force. In addition, the devices disclosed herein do not require attachment to the buckle or an associated strap, as required by other prior art devices. Instead, the devices disclosed herein are designed to be removably inserted around a buckle with each use, with the device remaining under the control and supervision of a mature operator, for example, a driver or parent, thereby preventing inadvertent or unsupervised operation by a restrained child or other passenger at inappropriate moments.

In various embodiments, a system that can be used to assist actuation of a buckle release button is provided. A system can comprise a device in accordance with the present disclosure. A system can further comprise an attachment device. The attachment device can be connected to the attachment feature. An attachment device can comprise a ring, a chain, a carabiner, a wire, a cable, a lanyard, a strap, or similar device. An attachment device can be any device suitable to attach the device, for example, to an operator's key set or other similarly accessible and portable accessory.

In various embodiments, a system can comprise a light. A light can be incorporated in a buckle release device. For example and with reference to FIG. 6, a light 630 can be inserted into distal end of first arm 601 of device 600. A light can also be inserted in other locations in a device, such as the second arm or the connecting portion. A system can comprise, for example, an LED flashlight removably inserted into a buckle release device. A system can further comprise a battery for a light inserted into the buckle release device. The device can be configured so that the light and/or battery are removably inserted so that the battery can be replaced as needed. A system can further comprise a switch for operation of a light, such as switch 631. A switch may be co-located with the light and the buckle release device configured to permit access to the switch on the inserted light, or the switch may be located remotely from the light, with wiring or other circuitry running between the light and the switch. A switch may be located in a position that provides for convenient operation of the light during operation of the buckle release device, such as insertion of the buckle release device over a buckle.

In various embodiments, a system can comprise a whistle. A whistle may be attached to a buckle release device or integrated into a buckle release device. A whistle may provide an operator with convenient access to a safety whistle for use in emergency situations.

In various embodiments, a system can comprise a glass breaker. A glass breaker can comprise a pointed steel tip, such as a tungsten carbide tip, attached to the buckle release device. A glass breaker can also comprise an automatic center punch tool, such as a spring loaded automatic center punch. A glass breaker may be attached, for example, at the distal end of the first arm or the second arm or outer wall of the connecting portion.

In various embodiments, a system also comprise a bottle opener. With reference to FIG. 7, a system comprise a device

700 with a bottle opener 740 located in an outer wall of first arm 701. A system can comprise a device with a bottle opener located in other locations of the device, such as the second arm or the connecting portion.

In various embodiments, a system can comprise a seat belt cutter. A seat belt cutter can be integrated into a buckle release device for use in emergency situations. Referring now to FIGS. 9A and 9B, devices with integrated seat belt cutters are shown. Device 900A illustrated in FIG. 9A includes a seat belt cutter comprising blade 960A embedded in first arm 901A of device 900A with a belt slot 961A opening into the interior of the device. Device 900B illustrated in FIG. 9B includes a seat belt cutter comprising blade 960B with a belt slot 961B opening toward the top of first arm 901B. In operation, a device such as device 900A or 900B comprising a seat belt cutter is positioned such that a seat belt is inserted into the opening of a belt slot such as 961A or 961B, and the device is moved relative to the inserted seat belt such that the blade (e.g., blade 960A or 960B) contacts and cuts the inserted seat belt. In various embodiments, a seat belt cutter may be configured so as to minimize risk of inadvertent contact with clothing or a child or person restrained by a buckle fastening mechanism during use of the buckle release device. For example a seat belt cutter may comprise a removable safety gate that can be opened to expose the seat belt cutter blade and permit insertion of a seat belt into the cutter.

Example 1

Non-Destructive Deflection Test Data for Device Prototypes Constructed from ABS and Polypropylene

Prototypes of a device for actuating a buckle release in accordance with various embodiments of the present disclosure were manufactured from acrylonitrile butadiene styrene (ABS) and from polypropylene and subjected to non-destructive testing to determine the pressure required to achieve various deflections of the button contact surface. The results are shown in Table 1.

TABLE 1

Results of non-destructive deflection distance testing.		
Pressure	Polypropylene Deflection	ABS Deflection
0.42 lbs.	0.05 in	0.10 in
0.98 lbs.	0.16 in	0.24 in
1.40 lbs.	0.31 in	0.46 in

For the polypropylene prototype, 1.63 lbs. of pressure was required to produce sufficient deflection of the button contact surface to contact the opposite arm (0.56 inches of deflection). For the ABS prototype, 1.74 lbs. of pressure was required to produce sufficient deflection of the button contact surface to contact the opposite arm (0.67 inches of deflection).

Benefits, other advantages, and solutions to problems have been described herein with regard to specific embodiments. Furthermore, the connecting lines shown in the various figures contained herein are intended to represent exemplary functional relationships and/or physical couplings between the various elements. It should be noted that many alternative or additional functional relationships or physical connections may be present in a practical system.

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However, the benefits, advantages, solutions to problems, and any elements that may cause any benefit, advantage, or solution to occur or become more pronounced are not to be construed as critical, required, or essential features or elements of the inventions. The scope of the invention is accordingly to be limited by nothing other than the appended claims, in which reference to an element in the singular is not intended to mean “one and only one” unless explicitly so stated, but rather “one or more.” Moreover, where a phrase similar to “at least one of A, B, or C” is used in the claims, it is intended that the phrase be interpreted to mean that A alone may be present in an embodiment, B alone may be present in an embodiment, C alone may be present in an embodiment, or that any combination of the elements A, B and C may be present in a single embodiment; for example, A and B, A and C, B and C, or A and B and C. Different cross-hatching is used throughout the figures to denote different parts but not necessarily to denote the same or different materials.

Devices, systems, and methods are provided herein. In the detailed description herein, references to “one embodiment”, “an embodiment”, “an example embodiment”, etc., indicate that the embodiment described may include a particular feature, structure, or characteristic, but every embodiment may not necessarily include the particular feature, structure, or characteristic. Moreover, such phrases are not necessarily referring to the same embodiment. Further, when a particular feature, structure, or characteristic is described in connection with an embodiment, it is submitted that it is within the knowledge of one skilled in the art to affect such feature, structure, or characteristic in connection with other embodiments whether or not explicitly described. After reading the description, it will be apparent to one skilled in the relevant art(s) how to implement the disclosure in alternative embodiments.

Furthermore, no element, component, or method step in the present disclosure is intended to be dedicated to the public regardless of whether the element, component, or method step is explicitly recited in the claims. No claim element herein is to be construed under the provisions of 35 U.S.C. 112(f), unless the element is expressly recited using the phrase “means for.” As used herein, the terms “comprises”, “comprising”, or any other variation thereof, are intended to cover a non-exclusive inclusion, such that a process, method, article, or apparatus that comprises a list of elements does not include only those elements but may include other elements not expressly listed or inherent to such process, method, article, or apparatus.

What is claimed is:

1. A device for actuating a buckle release button comprising:

a first arm, wherein the first arm comprises a first end and a button contact feature with a button contact surface, and wherein the first arm defines a first axis;

a second arm, wherein the second arm defines a second axis, and wherein the first axis and the second axis are substantially parallel;

a connecting portion comprising a U-shape disposed between the first arm and the second arm, wherein the first arm and the second arm comprise a laterally-opposed configuration; and

an attachment feature comprising one of a flange or a protrusion having an aperture configured to insertably receive an attachment device, wherein the attachment feature is disposed on the connecting portion and configured to facilitate attachment of the device to the attachment device;

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wherein the device is unitarily constructed, and wherein the device comprises a configuration suitable to be gripped about the first arm and the second arm by an operator's hand.

2. The device of claim 1, wherein the device is configured to be elastically deformable in the connecting portion to provide for movement of the button contact surface through a first deflection distance in response to a first deflection force.

3. The device of claim 2, wherein the first deflection distance is sufficient to actuate a buckle release button.

4. The device of claim 2, wherein the button contact feature comprises a button contact feature height, and wherein the button contact feature height is configured to provide buckle housing clearance at the first deflection distance.

5. The device of claim 2, wherein the device comprises an inter-arm dimension.

6. The device of claim 5, wherein the inter-arm dimension is configured to provide a clearance fit with respect to a buckle housing.

7. The device of claim 5, wherein the inter-arm dimension is configured to provide a compression fit with respect to a buckle release button.

8. The device of claim 7, wherein insertion of a buckle into the device produces the first deflection force, and wherein the first restoring force produced by the device provides a buckle release actuation assistance.

9. A device comprising:

a first arm, wherein the first arm comprises a first end and a button contact feature with a button contact surface, and wherein the first arm defines a first axis and a first inner surface;

a second arm, wherein the second arm comprises a second end and defines a second axis, and wherein the first axis and the second axis are substantially parallel; and

a connecting portion disposed between the first arm and the second arm, wherein the connecting portion comprises one of a flange or a protrusion having an aperture configured to insertably receive an attachment device; wherein one of the first arm, the second arm, and the connecting portion comprises a substantially rectangular cross section,

wherein the button contact surface and the first inner surface are substantially parallel,

wherein the device is configured to actuate a buckle release button, and

wherein the device has a unitary construction.

10. The device of claim 9, wherein the first arm comprises a first surface defining a first plane and the second arm comprises a second surface defining a second plane, and wherein the first plane and the second plane are substantially parallel.

11. The device of claim 9, wherein the device defines a buckle space depth and an interarm distance between a first inner surface of the first arm and a second inner surface of the second arm, and wherein the interarm distance is substantially the same at a plurality of points within the buckle space depth.

12. A device comprising:

a first arm, wherein the first arm comprises a first end and a button contact feature with a button contact surface and a button contact feature first arm attachment region, and wherein the first arm defines a first axis;

a second arm, wherein the second arm comprises a second end and defines a second axis; and

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a connecting portion disposed between the first arm and
the second arm, wherein the connecting portion com-
prises one of a flange or a protrusion having an aperture
configured to insertably receive an attachment device;
wherein the button contact feature extends from an inner 5
surface of the first arm and defines a button contact
feature axis oriented substantially perpendicularly to
the first axis,
wherein the button contact feature comprises a tapered
front surface tapering toward an interior of the device 10
from the first end of the first arm to the button contact
feature, and
wherein the device is configured to actuate a buckle
release button.

13. The device of claim **12**, wherein the button contact 15
feature comprises a substantially rectangular cross section.

14. The device of claim **13**, wherein the button contact
surface comprises a first surface area that is smaller than a
button contact feature first arm attachment region cross
section area. 20

* * * * *

Amazon Utility Neutral Patent Evaluation Procedure

Namra LLC (Patent Owner),

Evaluation Number 6450966971

v.

PATENT OWNER ARGUMENTS

B&B Solutions, LLC, dba UnbuckleMe (Seller).

Patent Owner Namra LLC, by and through its attorneys, submits the arguments and statements that follow against B&B Solutions, LLC (“**Seller**”).

PRELIMINARY STATEMENT

This is an evaluation of infringement of Claim 1 of Plaintiff’s US Patent No. 10,342,298 (“**the ‘298 Patent**”) under the rules of Amazon’s Utility Patent Neutral Evaluation Procedure, based on Seller’s unauthorized manufacture, use, importation, offer for sale, and sale of their competing “UnbuckleMe” products (the “**Accused Products**”) on Amazon.

FACTS

Namra LLC is the owner of the ‘298 Patent, entitled *Device and System for assisting Actuation of a Buckle Release*, issued on July 9, 2019. Attached as Exhibit 1 is a true and correct copy of the ‘298 Patent.

Claim 1 of the ‘298 Patent, reproduced below, is directed to a hand-operated tool that assists a user in depressing the button of a car seat buckle and actuating of the buckle release. FIGS. 3A and 3B of the ‘298 Patent illustrate relevant details of the device recited in Claim 1. Reference numerals for relevant elements of the claimed device illustrated in FIGS. 3A and 3B are included in square brackets in the text of Claim 1 below to aid the Evaluator’s understanding of certain claim elements with reference to the figures. Relevant portions of the specification describing the features of the claimed device can be found at column 4, line 7 to line 62.

Claim 1 of the ‘298 Patent:

A device [300] for actuating a buckle release button comprising:

- a first arm [301], wherein the first arm comprises a first end [303] and a button contact feature [307] with a button contact surface [308], and wherein the first arm defines a first axis [A-A’];

- a second arm [302], wherein the second arm defines a second axis [B-B’], and wherein the first axis and the second axis are substantially parallel;

- a connecting portion comprising a U-shape disposed between the first arm and the second arm [305], wherein the first arm and the second arm comprise a laterally-opposed configuration; and

- an attachment feature [309] comprising one of a flange or a protrusion having an aperture [310] configured to insertably receive an attachment device, wherein the attachment feature is disposed on the connecting portion and configured to facilitate attachment of the device to the attachment device;

- wherein the device is unitarily constructed, and

- wherein the device comprises a configuration suitable to be gripped about the first arm and the second arm by an operator's hand.

Attached as Exhibit 2 is a claim chart further breaking Claim 1 of the ‘298 Patent down into discrete elements and assigning an “Element Label” to each for comparison to Seller’s Accused Product in the analysis that follows.

Seller’s Accused Product and Infringement Analysis

Attached as Exhibit 3 and Exhibit 4 are true and correct printouts of the Seller’s Amazon seller page and the product listing for Accused Product ASIN B07JJRVXJ1, respectively, captured on November 25, 2019. The analysis that follows applies to all Accused Products sold by Seller, which differ only in color and whether sold singly or as a pair.

As a preliminary matter, Seller is expected to argue that the Accused Products do not infringe because they include a thin rubberized or soft-touch material layer overmolded onto the device and they are therefore not unitarily constructed. This argument fails because the Accused Products include the claimed unitarily constructed device, or the Accused Product is equivalent.

First, the Accused Products comprise an injection-molded polymer device (the “Base Device”). The Base Device is overlaid with an overmolded layer. A photograph of the Base

Device and the removed overmolded layer is attached in Exhibit 5. The Base Device, without the overmolded layer, meets each and every element of Claim 1 of the ‘298 Patent. The Accused Products therefore, both with the overmolded layer and as the Base Device, literally infringe every element of the claim in question, and the presence of the overmolded layer of material does not render the Accused Products non-infringing.

Second, the Accused Products would be found to infringe under the doctrine of equivalents by any application of that doctrine to the analysis in this case.

In the analysis that follows, each of the elements of Claim 1 of the ‘298 Patent set forth in the claim chart in Exhibit 2 is compared to an exemplary Accused Product, both with the overmolded layer and as the Base Device having the overmolded layer removed, to demonstrate that each meets every element of and therefore infringes Claim 1 of the ‘298 Patent.

Exhibit 6 provides views of Seller’s Accused Products, both with the overmolded layer in place (top) and as the Base Device with the overmolded layer removed (middle). The defined term “Accused Products” includes the Base Device both with and without the overmolded layer. FIG. 8A of the ‘298 Patent showing a comparable view of an embodiment of the device of Claim 1 is also shown in Exhibit 6 (bottom) for reference and comparison against the Accused Products. The images of the Accused Products and the device of Claim 1 shown in FIG. 8A are labelled to identify all but a few of the elements of Claim 1 by the corresponding “Element Label” in the claim chart of Exhibit 2.

Claim Element A: “A device for actuating a buckle release button comprising:”

To the extent the preamble of Claim 1 of the ‘298 Patent is deemed a limitation of Claim 1, its meaning is clear without need for construction, and Seller’s Accused Products meet this element. Attached as Exhibit 7 is a true and correct printout of the “How it Works” page from Seller’s website captured on November 21, 2019, describing and illustrating how the Accused

Products are used for actuating a child car seat buckle release. Based on Seller's own product information, the Accused Products are intended to be used for actuating a buckle release button of a car seat buckle and meet the ordinary meaning of the terms of the preamble.

Claim Element B: "a first arm, wherein the first arm comprises"

The terms of this element require no construction and are readily understood by their ordinary meaning. The ordinary meaning of the term "arm" simply means a slender projecting structure resembling an arm. The Accused Products include a first arm "B" as shown in Exhibit 6 and meet this element.

Claim Element C: "a first end and"

The term "first end" requires no construction and its meaning can be readily ascertained in the context of the claim. The term "first end" means the distal terminus of the first arm of the claimed device, denoted as element "C" in the images of the Accused Products and a corresponding view of the claimed device in FIG. 8A. The Accused Products comprise a first end "C" as shown in Exhibit 6.

Claim Element D: "a button contact feature with"

The term "button contact feature" requires no construction and that its meaning can be readily ascertained in the context of the claim. The Accused Products, both with and without the overmolded layer, include a button contact feature "D" that performs the same function described in the specification of the '298 Patent during operation.¹ The button contact feature "D" of the Accused Products is shown in Exhibit 6 for comparison to a corresponding view of the claimed device from FIG. 8A. The Accused Products comprise a button contact feature "D" as shown in Exhibit 6.

¹ See Exhibit 1, FIGS. 3A and 3B and specification at column 4, lines 44-45, with reference to button contact feature 307: the "button contact feature" is "configured to operatively engaged a buckle fastening system button."

Claim Element E: “a button contact surface, and”

The meaning of the phrase “button contact surface” requires no construction and can be understood from its plain meaning. As described above, the button contact feature contacts and engages the button of a car seat buckle. The “button contact surface” is the surface of the button contact feature that makes contact with the button of a car seat buckle. This claim element is described in detail in structure and function throughout the specification, including at column 4, lines 34 to 45. The specification, at column 6, lines 27 to 35 and with reference to FIG. 4, states:

[t]he operator may position device 400 relative to the buckle so that button contact feature 407 is positioned over the buckle release button. When device 400 is suitably positioned, the operator may squeeze device 400 to compress the device, **engaging button contact surface 408 with the underlying buckle release button** as the button contact surface travels through the first deflection distance in response to the first deflection force provided by the operator.

As shown in Exhibit 6, the Accused Products comprise a button contact surface “E” and meet this claim limitation.

Claim Element F: “wherein the first arm defines a first axis;”

The phrase “wherein the first arm defines a first axis” needs no construction and can be understood by its plain meaning.² As shown in Exhibit 6, the first arms “B” of the Accused Products both have an elongated configuration that define an axis “F” running the length of the arms. Thus, the Accused Products meet this claim element.

Claim Element G: “a second arm,”

The term “second arm,” like the term “first arm,” requires no construction and has a similar meaning as the term “first arm.” The Accused Products, with and without the overmolded

² The specification of the ‘298 Patent provides support, stating at column 4, lines 13-14, that the first arm (301) of device 300 illustrated in FIGS. 3A and 3B can have “an elongated configuration and define a first axis A-A” as shown in the figures.

layer, include a second arm “G” corresponding to a second arm “G” of the claimed device illustrated in FIG. 8A of the ‘298 Patent, as shown in Exhibit 6.

Claim Element H: “wherein the second arm defines a second axis,”

The phrase “wherein the second arm defines a second axis” needs no construction and can be understood by its ordinary meaning.³ As illustrated in Exhibit 6, the second arms “G” of the Accused Products, with or without the overmolded layer, both define an axis “H” running the length of the arms. Thus, the Accused Products clearly meet this claim element.

Claim Element I: “wherein the first axis and the second axis are substantially parallel;”

This element requires no construction and the plain meaning is clear: the axes defined by the arms are substantially parallel to one another. As illustrated in Exhibit 6, axes “F” and “H” of the Accused Products are clearly substantially parallel within meaning of this claim element.

Claim Element J: “a connecting portion comprising a U-shape disposed between the first arm and the second arm,”

No construction of the terms in this element is required and the ordinary meaning of the terms is clear: the claimed device comprises a connecting portion shaped like the letter “U” located between the first arm and the second arm. As shown in Exhibit 6, the curved portions “J” of the Accused Products connect the first and second arms of the devices and confer a shape resembling the letter “U” on the Accused Products that is essentially identical to the overall shape of the claimed device illustrated in FIG. 8A of the ‘298 Patent. Thus, the Accused Products include “a connecting portion comprising a U-shape disposed between the first arm and the second arm” as recited in Claim 1.

³ The specification of the ‘298 Patent provides support, stating at column 4, lines 14-15, that the second arm (302) of device 300 illustrated in FIGS. 3A and 3B can have “an elongated configuration and define a second axis B-B” as shown in the figures.

Claim Element K: “wherein the first arm and the second arm comprise a laterally-opposed configuration; and”

The ordinary meaning of the term “laterally-opposed configuration” as used to describe the relationship of the first and second arm relative to this claim element is clear: the first and second arms are configured in an opposed condition, or opposite one another, akin to an opposable thumb and forefinger. Reference to the figures and specification of the ‘298 Patent support this interpretation. As can be ascertained from the figures, the qualifier “laterally” simply means that the first and second arms are arranged side-by-side, laterally to one another with respect to their axes, rather than being at opposite ends from one another along the same axis, as they might be, for example, if the Accused Devices were opened to a fully extended or flat position with their termini at opposite ends of the device.⁴ Therefore, Accused Products clearly comprise a first arm and a second arm in a laterally-opposed configuration within the meaning of this element of Claim 1 and have the same configuration as the claimed device illustrated in FIG. 8A, as shown in Exhibit 6.

Claim Element L: “an attachment feature comprising one of a flange or a protrusion having”

The ordinary meaning of the terms of this element is clear with reference to the figures and specification of the ‘298 Patent. The specification and figures describe and illustrate device 300 having an attachment feature 309 protruding from an outer surface of connecting portion 305. *See* Exhibit 1, FIGS. 3A and 3B and column 4, lines 46 to 59. The Accused Products likewise include an attachment feature “L” that comprises a protrusion extending from the curved portion of connecting portion “J” in a manner that is nearly identical to that of the claimed device illustrated in FIG. 8A of the ‘298 Patent, as shown in Exhibit 6. The Accused

⁴ *See also* Exhibit 1, FIGS. 3A and 3B and column 4, lines 19-23 for additional support: “[d]evice 300 can be configured such that first arm 301 and second arm 302 comprise a laterally-opposed configuration, as illustrated, with distal end 303 of first arm 301 and distal end 304 of second arm 302 configured opposite one another.”

Products clearly comprise an attachment feature comprising a protrusion within the meaning of this element of Claim 1 of the ‘298 Patent.

Claim Element M: “an aperture configured to insertably receive an attachment device,”

The terms of this element have their ordinary meaning, namely that the attachment feature described above has an “aperture” or opening through it and that the aperture is configured so that an attachment device can be inserted into the aperture. The specification and figures of the ‘298 Patent describe and illustrate device 600 having an attachment feature 609 with an aperture 610 and a key ring 612 inserted into aperture 610.⁵ The Accused Products, with and without the overmolded layer, comprise an attachment feature having “an aperture configured to insertably receive an attachment device.” As shown in Exhibit 6, the Accused Devices have an aperture “M” through the attachment feature “L” that is highly similar to the corresponding feature of the claimed device shown in FIG. 8A of the ‘298 Patent. And photographs from Seller’s website illustrate that the features of the Accused Products described in this section are configured to insertably receive an attachment device within the meaning of this term. Exhibit 8 is a true and correct copy of a page from the Seller’s website captured on November 26, 2019 that includes a photograph showing an Accused Product with an attachment device inserted through the aperture of the attachment feature of the device. The Accused Products comprise “an aperture configured to insertably receive an attachment device” within the meaning of this element of Claim 1.

Claim Element N: “wherein the attachment feature is disposed on the connecting portion and configured to facilitate attachment of the device to the attachment device;”

The terms of this element have their plain and ordinary meaning, namely that the attachment feature described above is located on the connecting portion and configured so that

⁵ See Exhibit 1, FIG. 6 and column 4, lines 54 to 56. The specification lists other examples of suitable attachment devices, including, for example, carabiners, chains, and lanyards. See Exhibit 1 at column 4, lines 50-52.

an attachment device can be connected to the claimed device. As discussed above for Claim Element “M,” the specification and figures of the ‘298 Patent describe and illustrate device 600 having an attachment feature 609 with an aperture 610 and a key ring 612 inserted into aperture 610. *See* Exhibit 1, FIG. 6 and column 4, lines 54 to 56. The Accused Products, with and without the overmolded layer, comprise an attachment feature “disposed on the connecting portion” (“J”) that is configured to facilitate attachment of the Accused Device to an attachment device, as recited by this claim element. As shown in Exhibit 6, attachment feature “L” of the Accused Devices is located on connecting portion “J” in a configuration highly similar to the claimed device illustrated in FIG. 8A of the ‘298 Patent. And as shown in Exhibit 8, this configuration of the Accused Devices facilitates attachment to an attachment device. The Accused Products comprise an “attachment feature [that] is disposed on the connecting portion and configured to facilitate attachment of the device to the attachment device” within the meaning of this element of Claim 1 of the ‘298 Patent.

Claim Element O: “wherein the device is unitarily constructed, and”

The terms of this claim element require no construction and the ordinary meaning is clear: the device is manufactured as a single unit and is not an assembly of multiple components. As described throughout the arguments presented herein, the Accused Products comprise a unitarily constructed device meeting all elements of Claim 1 of the ‘298 Patent under a literal infringement analysis, based at least on the fact that each Accused Product comprises a unitarily constructed Base Device that meets each and every element of Claim 1.

The Seller is expected to dispute this interpretation of the subject claim element and assert that, because the Accused Product include an overmolded second layer, they do not infringe Claim 1. However, upon removal of the separable overmolded layer from the Base Device, the Base Device at the heart of each Accused Product still meets every limitation of

Claim 1 of the ‘298 Patent, as illustrated in Exhibit 6 and described herein. ***That the otherwise infringing Base Device is outfitted with a removable, overmolded layer that may comprise a different material from the Base Device does not rescue the Accused Products from literal infringement any more than placing a sticker, adding a layer of paint, or tying a bow on the Base Device would render it not unitarily constructed and therefor non-infringing.*** Because the Accused Product comprises a device molded as a single unit (i.e., a “unitarily constructed” Base Device) that meets every other element of Claim 1 as described herein, the Accused Product literally infringes Claim 1 of the ‘298 Patent. The presence of the overmolded layer should be of no consequence in the literal infringement analysis of the Accused Products and does not negate the fact that the Accused Products comprise an article of manufacture that meets every element of Claim 1.

Claim Element P: “wherein the device comprises a configuration suitable to be gripped about the first arm and the second arm by an operator’s hand.”

The meaning of this limitation is clear and does not require construction: the device has a configuration that enables it to be gripped around both arms in one hand of an operator. The Accused Product meets the limitations of this element. Exhibit 9 is a true and correct copy of a product page from the Seller’s website captured on November 25, 2019. The page includes a photograph showing an Accused Product “gripped about the first arm and the second arm by an operator’s hand,” with the arms of the device positioned between the thumb and forefinger of the operator’s hand, demonstrating that the Accused Product meets the limitations of this element.

CONCLUSION

The Accused Products meet each and every element of claim 1 of the ‘298 Patent. An element-by-element analysis and comparison of Claim 1 and the Accused Products, including the Base Device present at the core of each of the Accused Products, demonstrates that the Accused

Products literally infringe Claim 1 of the '298 Patent. The Accused Products are also structurally and functionally equivalent to the device of Claim 1, and Patent Owner would be likely to prove that Seller's Accused Products infringe Claim 1 by application of the doctrine of equivalents and application of any test under that doctrine.

For these reasons, Patent Owner submits that any patent infringement analysis of the Accused Products under Claim 1 of the '298 patent would find that the Accused Products are likely to infringe Claim 1 of the '298 Patent.

WHEREFORE, Namra requests that the Evaluator enter a finding that Patent Owner is likely to prove Seller's Accused Products infringe Claim 1 of the '298 Patent.

Dated: November 27, 2019

Respectfully submitted,

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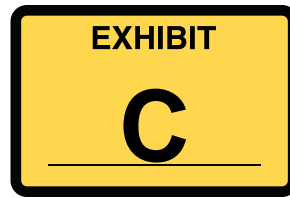


Exhibit 1

(12) **United States Patent**
Riley-Carter et al.

(10) **Patent No.:** **US 10,342,298 B2**
(45) **Date of Patent:** ***Jul. 9, 2019**

(54) **DEVICE AND SYSTEM FOR ASSISTING
ACTUATION OF A BUCKLE RELEASE**

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Hill, CA (US)

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

This patent is subject to a terminal dis-
claimer.

(21) Appl. No.: **15/970,833**

(22) Filed: **May 3, 2018**

(65) **Prior Publication Data**

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Related U.S. Application Data

(63) Continuation of application No. 15/799,911, filed on
Oct. 31, 2017, now Pat. No. 10,271,617.

(60) Provisional application No. 62/415,407, filed on Oct.
31, 2016.

(51) **Int. Cl.**
A44B 11/25 (2006.01)
B60N 2/28 (2006.01)
A44B 15/00 (2006.01)

(52) **U.S. Cl.**
CPC **A44B 11/2573** (2013.01); **A44B 11/2523**
(2013.01); **A44B 11/2526** (2013.01); **A44B**
11/2546 (2013.01); **A44B 11/2549** (2013.01);
A44B 11/2511 (2013.01); **A44B 15/005**
(2013.01); **B60N 2/2812** (2013.01); **B60N**
2002/2818 (2013.01)

(58) **Field of Classification Search**

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B29C 66/8614; A44B 11/2546; A44B
44/2573; A44B 11/2526; A44B 11/2511;
B60N 2002/2815; Y10T 29/53943
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,879,806 A * 11/1989 Feng H05K 13/0491
29/741
5,050,277 A * 9/1991 Jimenez A44B 11/2511
24/633
5,282,737 A 2/1994 Ray
5,666,865 A * 9/1997 Ito H01H 85/0208
29/278

(Continued)

OTHER PUBLICATIONS

Barbara Heilman and Becca Davison, UnbuckleMe product, <https://unbuckleme.com/>.

(Continued)

Primary Examiner — Robert Sandy

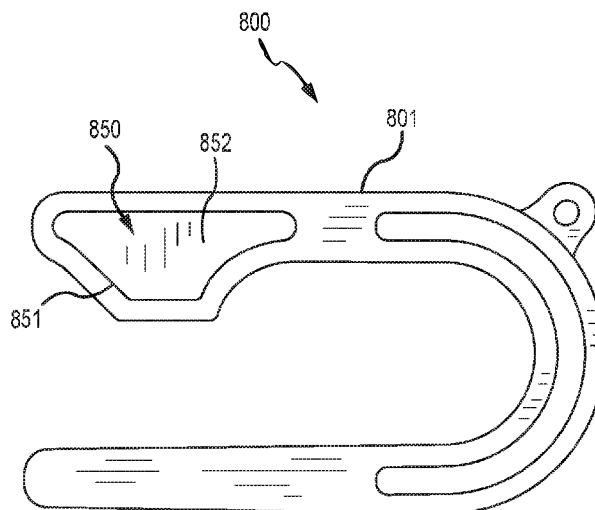
Assistant Examiner — Michael S Lee

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(57) **ABSTRACT**

A device and system that can be used to assist actuation of
a buckle release is disclosed. A device can comprise a first
arm and a second arm joined by a U-shaped connecting
portion. The device can also comprise a button contact
feature. The device can be inserted over a buckle with the
button contact feature over a buckle release button, and the
device used to assist engagement of the buckle release
button by a person operating the device. A system can
comprise a device and various additional features or acces-
sories.

14 Claims, 11 Drawing Sheets



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References Cited

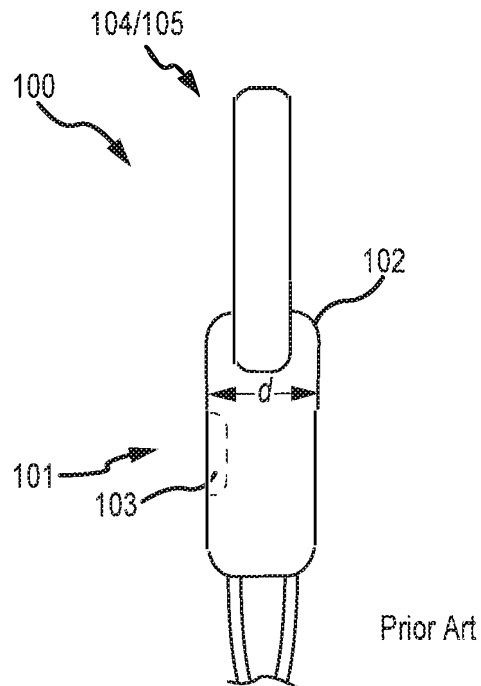
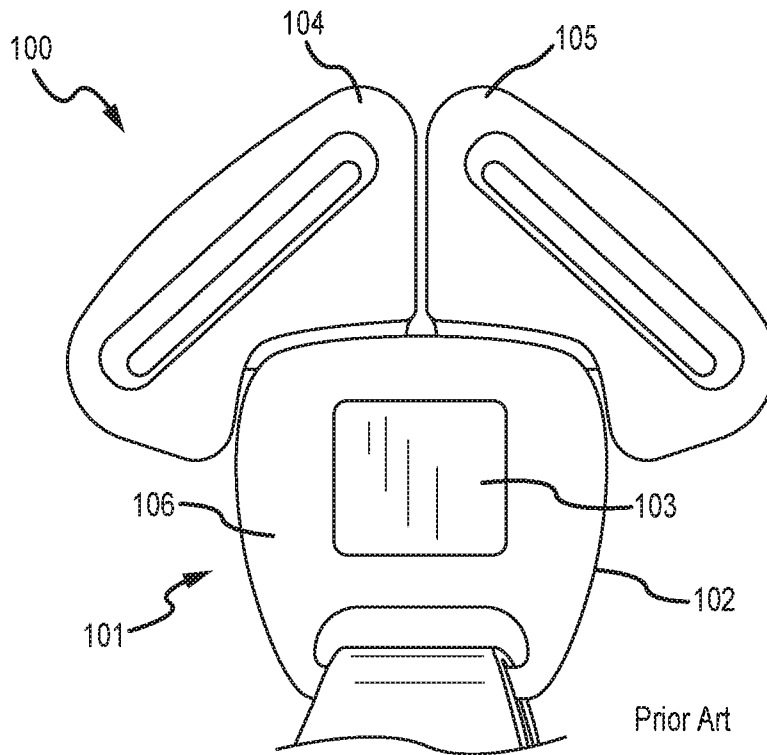
U.S. PATENT DOCUMENTS

7,384,086 B2 6/2008 Lukaszynski et al.
8,539,862 B1 9/2013 Robinson
2011/0308057 A1* 12/2011 Abrams B25B 7/02
29/426.5
2016/0166014 A1* 6/2016 Soenen A44B 11/2526
24/639
2018/0071902 A1 3/2018 Davison et al.
2018/0132571 A1* 5/2018 Lambarth A44B 11/2526

OTHER PUBLICATIONS

CSC Solutions LLC, Bucklebee product, <http://www.bucklebee.com/>.
Marlene Robinson, BuckleBopper product, <https://bucklebopper.com/>.
Mathiowetz et al., "Grip and Pitch Strength: Normative Data for Adults," Arch. Phys. Med. Rehabil., vol. 66, pp. 69-74 (1985).
U.S. Appl. No. 62/394,080, filed Sep. 13, 2016.

* cited by examiner



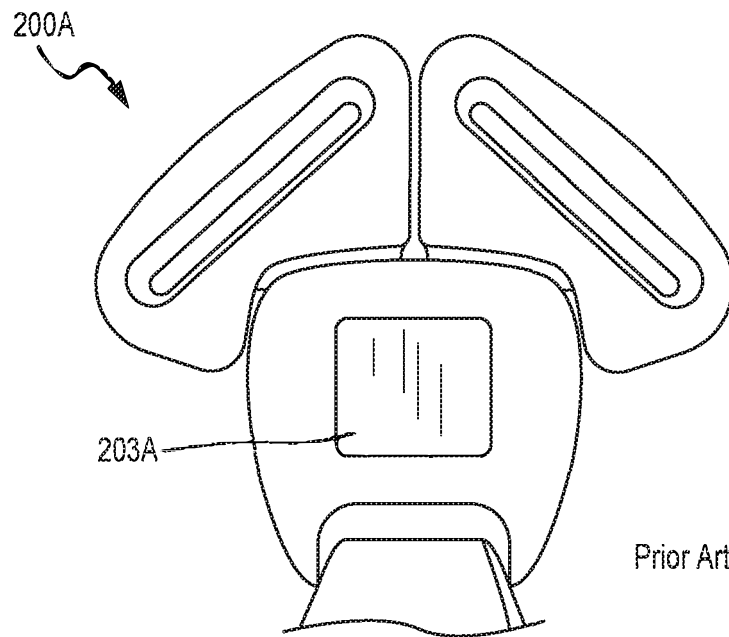


FIG. 2A

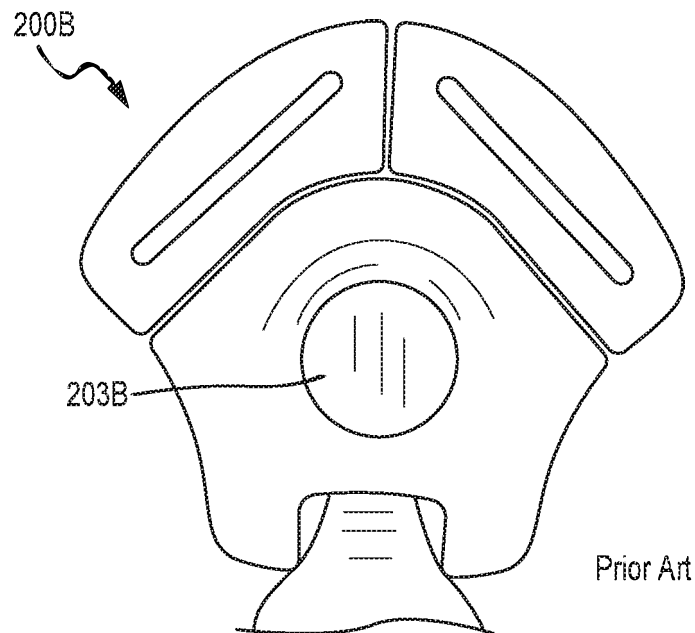


FIG. 2B

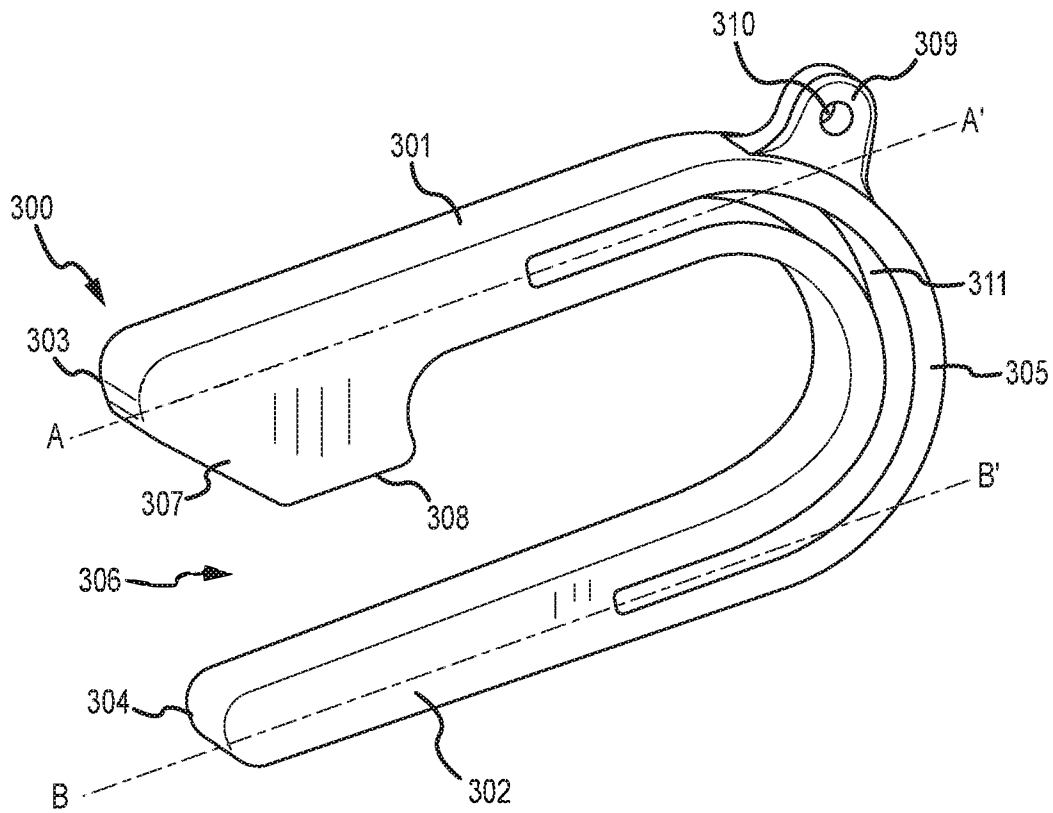


FIG. 3A

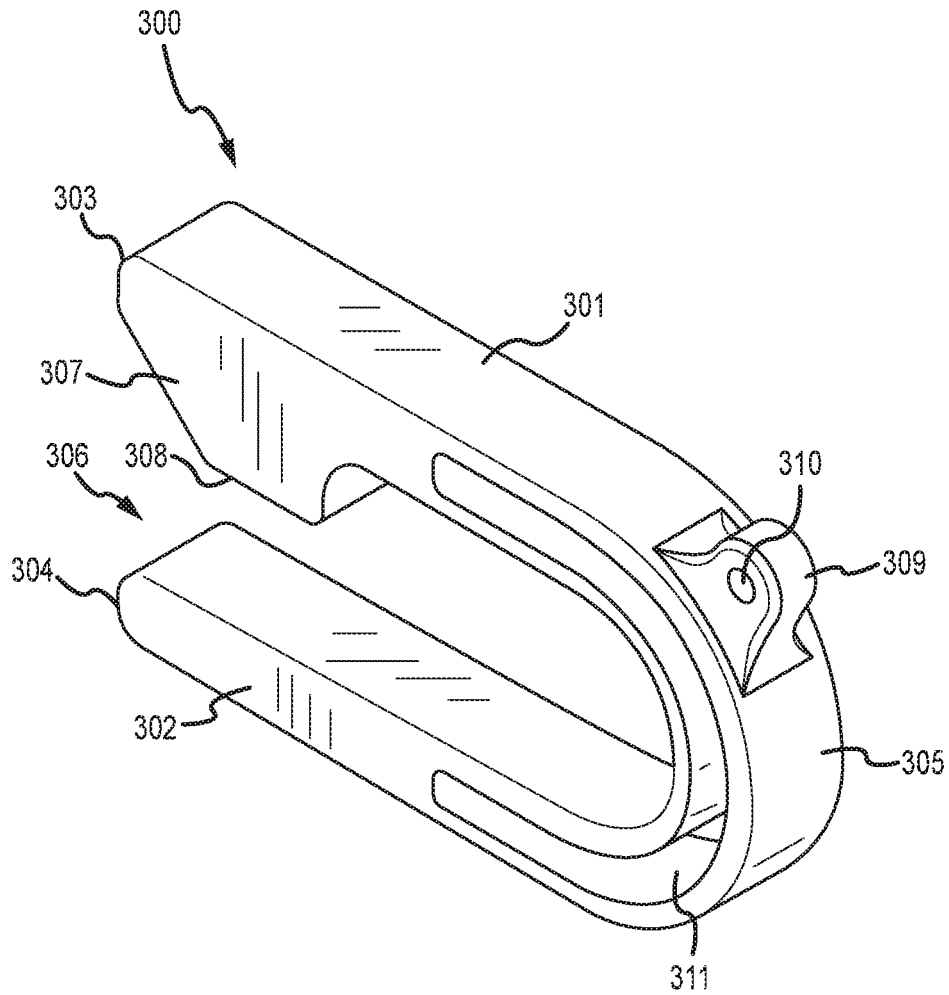


FIG. 3B

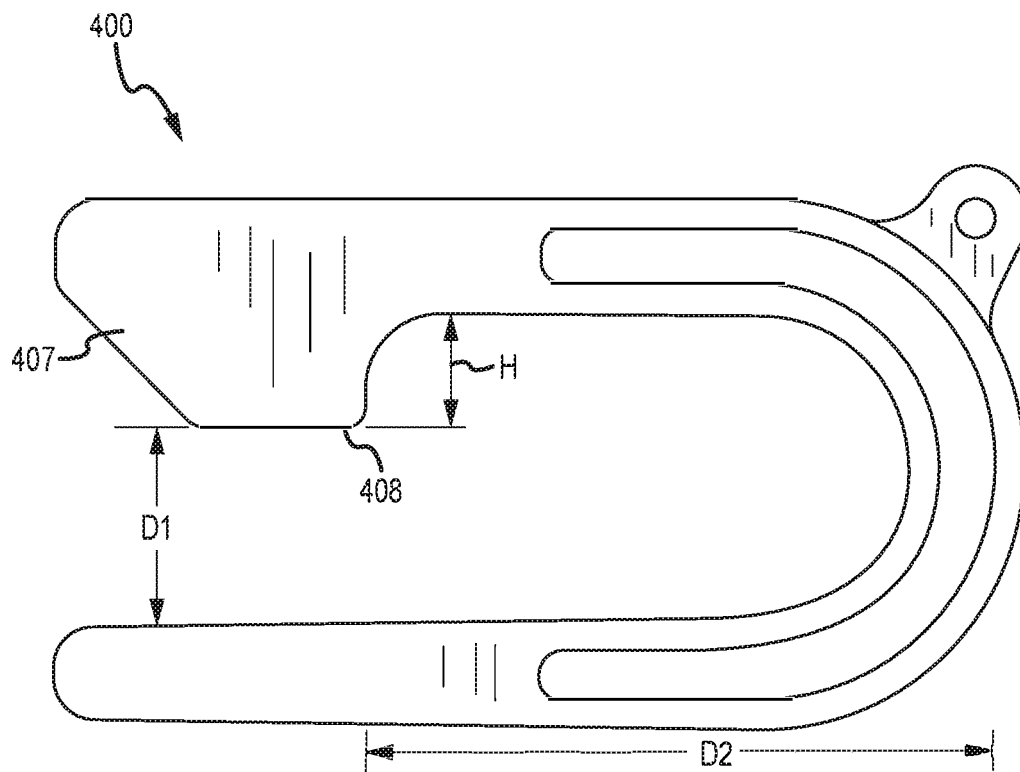


FIG. 4

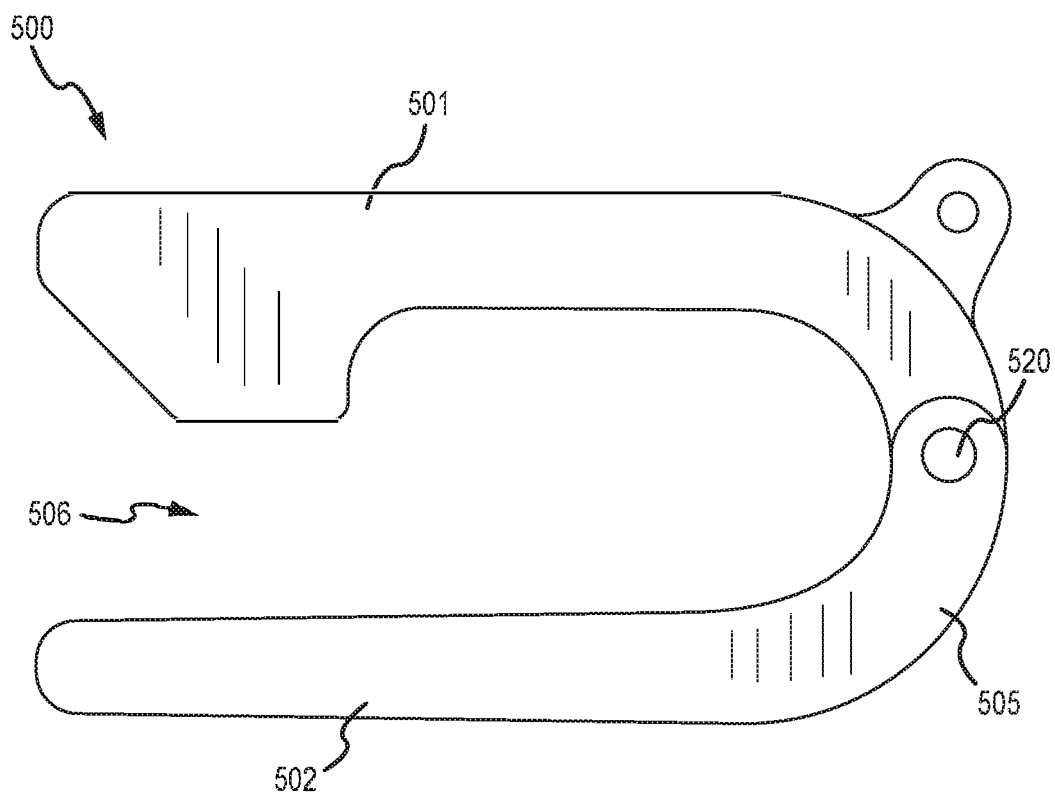


FIG. 5

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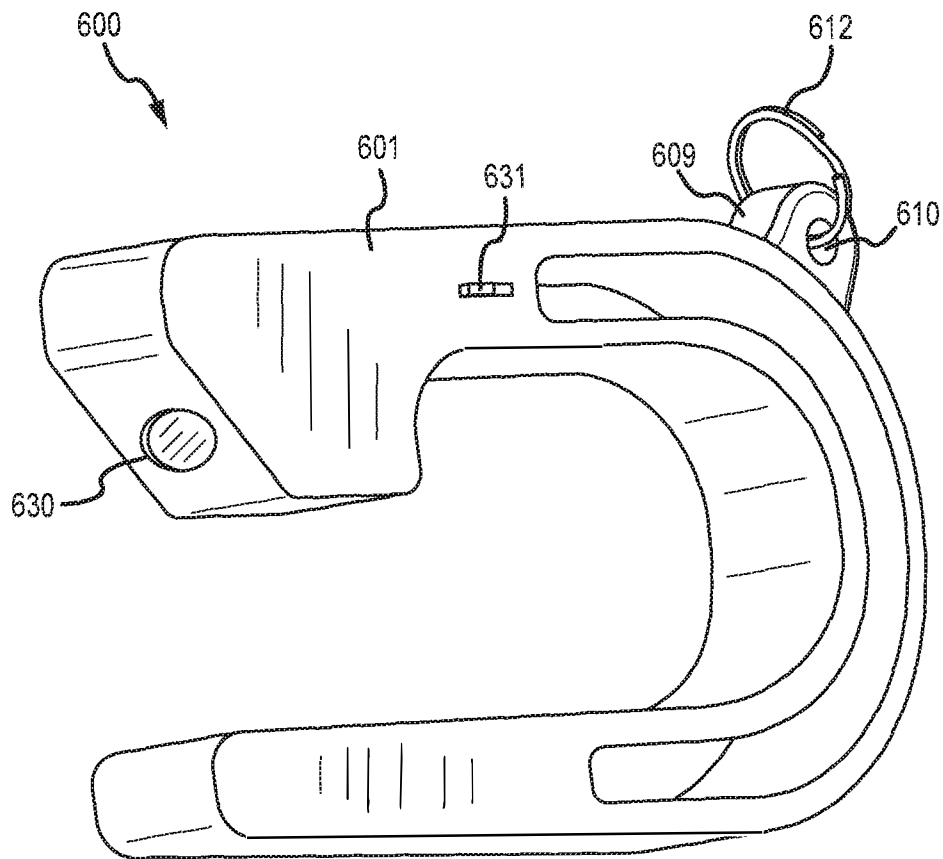


FIG. 6

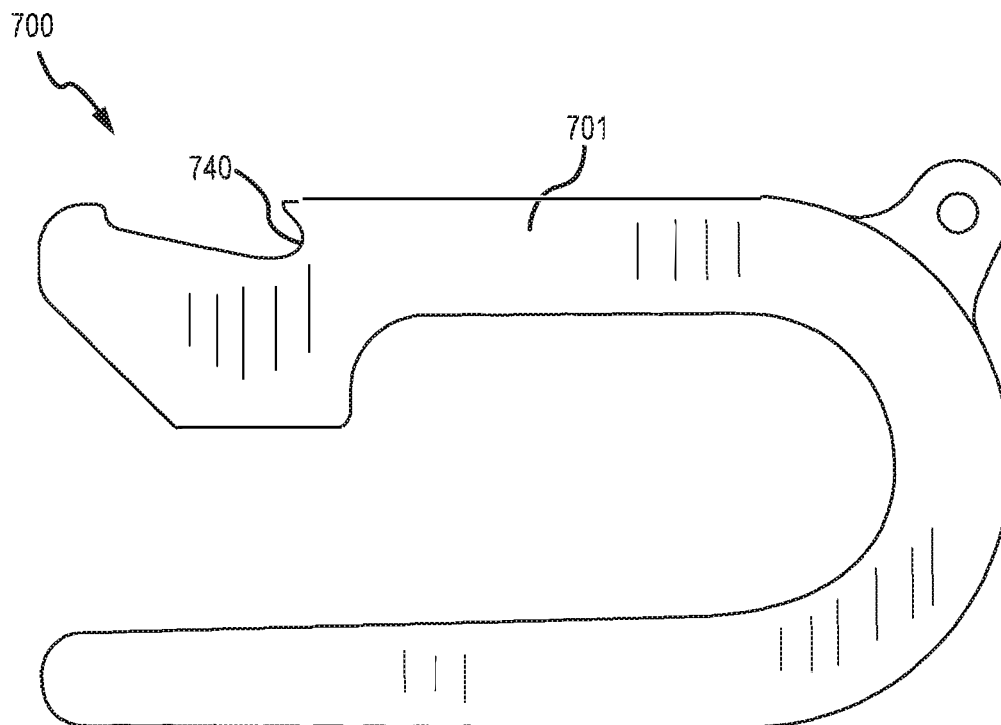


FIG. 7

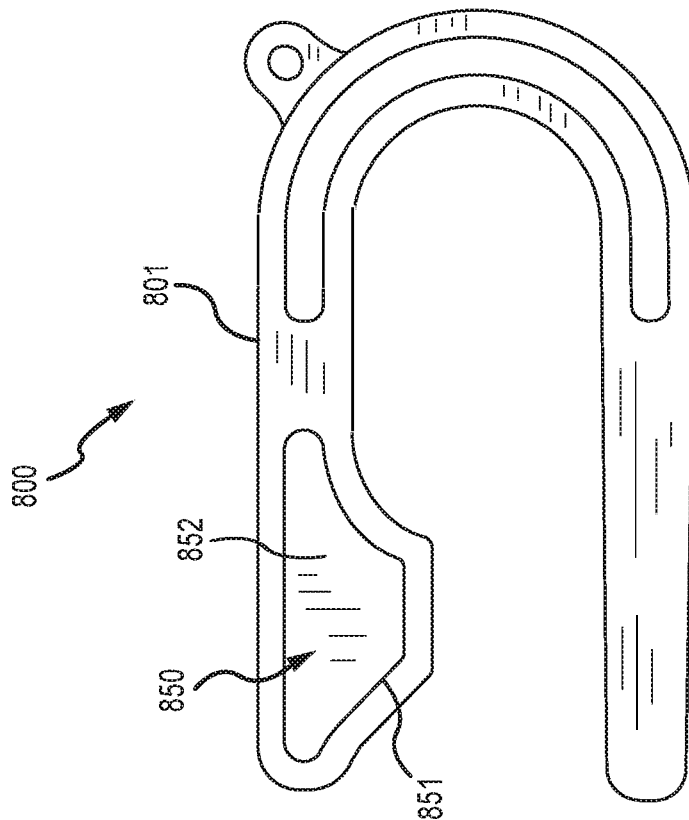


FIG. 8A

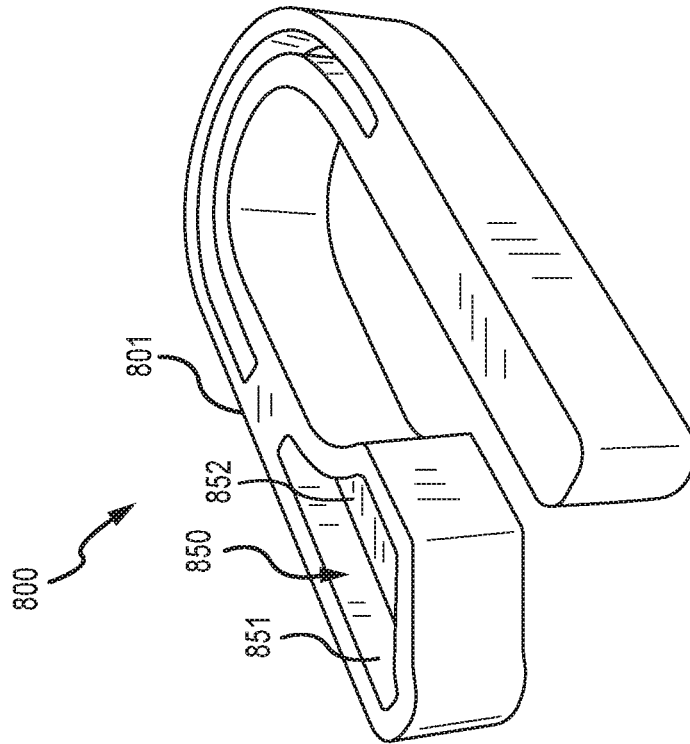


FIG. 8B

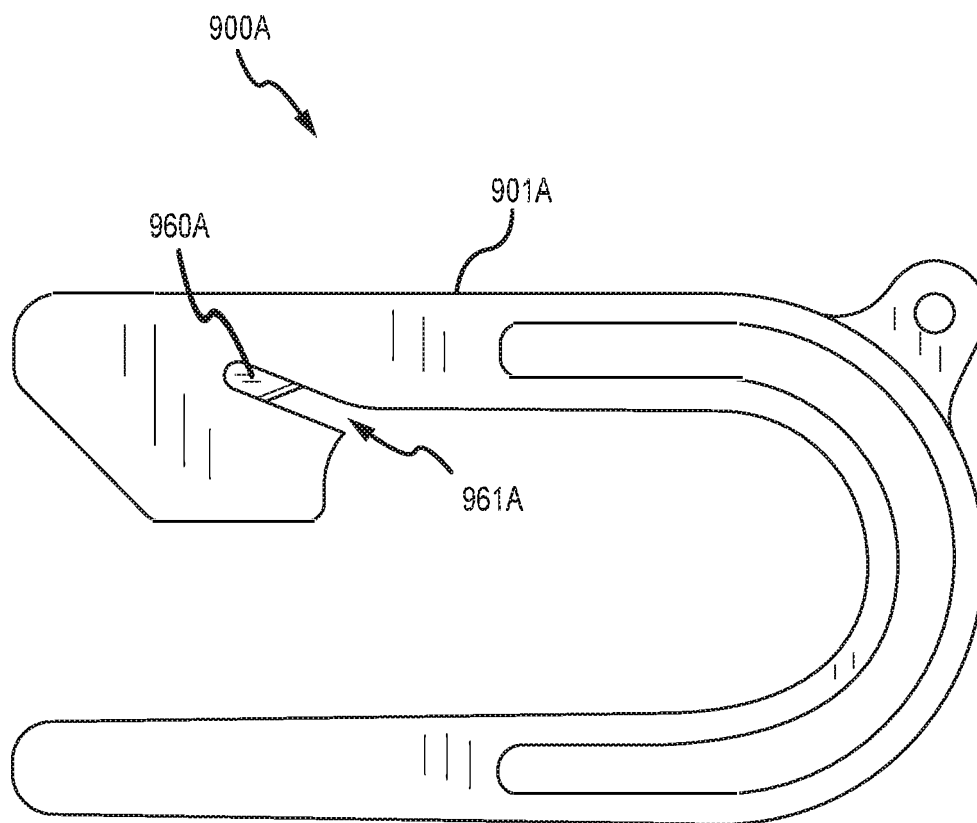


FIG. 9A

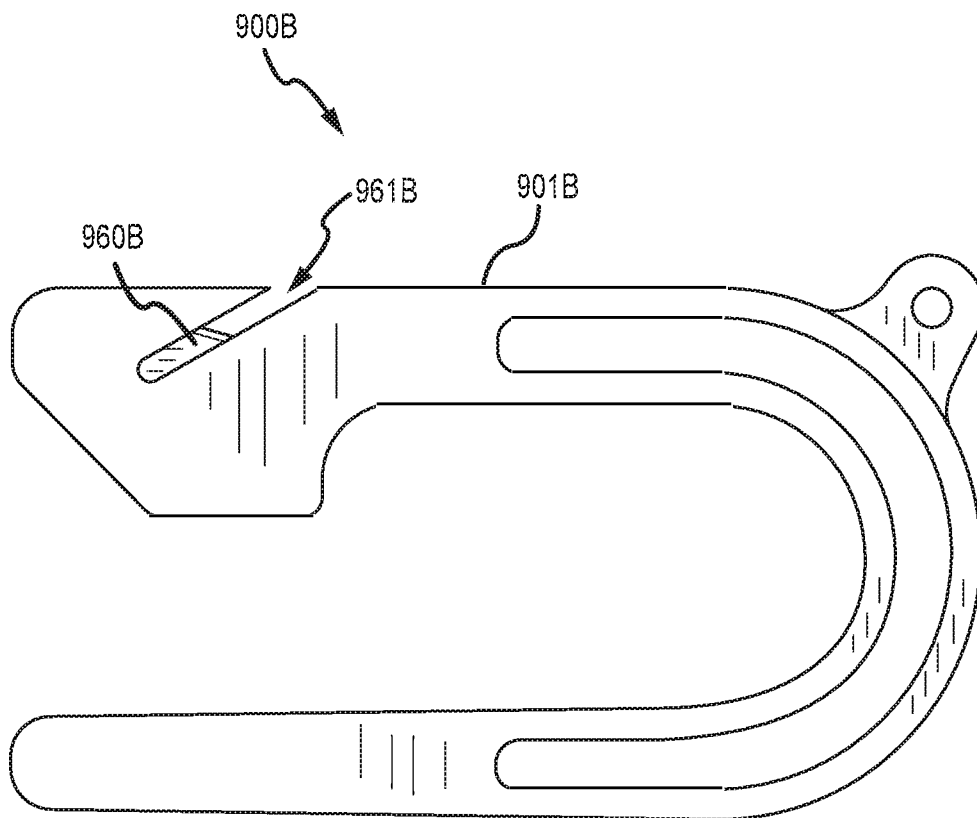


FIG. 9B

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**DEVICE AND SYSTEM FOR ASSISTING
ACTUATION OF A BUCKLE RELEASE****CROSS-REFERENCE TO RELATED
APPLICATIONS**

This application is a Continuation of U.S. application Ser. No. 15/799,911 entitled "DEVICE AND SYSTEM FOR ASSISTING ACTUATION OF A BUCKLE RELEASE," filed on Oct. 31, 2017, which application claims the benefit of and priority to U.S. Provisional Application Ser. No. 62/415,407, entitled "DEVICE AND SYSTEM FOR ASSISTING ACTUATION OF A BUCKLE RELEASE," filed on Oct. 31, 2016. The entire disclosures of the aforementioned applications are incorporated herein by reference for any purpose.

FIELD

The present disclosure relates to a device and system for actuation of a buckle release. In particular, the disclosure relates to a device and system that can be used to assist actuation of buckle release buttons in restraint system buckles.

BACKGROUND

Restraint systems such as child safety seats used in automobiles as well as restraint systems used in other settings frequently include a buckle-type fastening mechanism to secure two or more portions of the restraint system around a restraint system occupant. A buckle-type fastening mechanism generally includes a buckle attached to an end of a first section of restraint system belting and a tongue or latchplate portion attached to a second section of restraint system belting. The tongue is inserted into the buckle where it is releasably latched to secure the first and second sections of restraint system belting. Child safety seats frequently include a third section of belting with a second tongue that is inserted into the buckle adjacent to the first tongue, with both tongues being secured by the buckle.

A buckle generally comprises a housing containing a spring-loaded latching mechanism for releasably latching the tongue or tongues within the buckle. A typical buckle housing comprises an aperture containing an actuating button for operating and releasing the latching mechanism. A spring in the latching mechanism exerts a bias urging the button and/or latching mechanism toward the latched position. The button can be operated by depressing the button using a thumb or fingertip against the bias of the spring with sufficient pressure to overcome the spring force of the latching mechanism and move the button and mechanism from the latched position to a release position, thereby causing the latching mechanism to release the tongue(s) from the latched condition. In a typical buckle, the area of the actuating button approximates or is configured to be pressed by a person's thumb or fingertip. The surface of the actuating button against which the thumb or fingertip presses is generally flush with or recessed from the surface of the housing surrounding the button.

A prior art buckle fastening system **100** is illustrated in FIGS. **1A** and **1B**. Buckle fastening system **100** includes buckle **101** comprising buckle housing **102** and buckle release button **103**. Buckle fastening system **100** also includes first and second tongues **104** and **105**. Buckle housing **102** has a depth **d**. Buckle housing **102** further includes a button surround **106** defining an opening in the

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front face of the buckle that defines the opening for buckle release button **103**. Buckle release buttons can be configured in a variety of shapes, including the square and circular buttons **203A** and **203B** of prior art buckle fastening systems **200A** and **200B** illustrated in FIGS. **2A** and **2B**, respectively, as well as various other geometric and irregular shapes.

Buckle fastening systems such as those described above can be inconvenient or challenging for certain people to operate for various reasons, including individual variability in hand and finger size and strength, certain physical or medical conditions such as tendonitis and arthritis, and the like. Likewise, the force required for actuation of buckle releases used for certain car seat models can be relatively high, creating discomfort, pain, or fatigue for users, for example, that may be required to operate such a buckle on a frequent basis in various circumstances. Devices and systems that can be used to assist actuation of buckle releases are desirable.

The present disclosure provides devices and systems that can be used to assist actuation of a restraint system buckle release button.

SUMMARY

In various embodiments, a device for actuating a buckle release button can comprise a first arm, a second arm, and a connecting portion disposed between the first arm and the second arm. A first arm can comprise a first end and a button contact feature with a button contact surface. The first arm can define a first axis, and the second arm can define a second axis. The connecting portion can comprise a U-shape, and the first arm and the second arm can comprise a laterally-opposed configuration. A device for actuating a buckle release button can comprise an attachment feature. A device can have a unitary construction and can comprise a polymer material. A device can be configured to be elastically deformable in one of the first arm, the second arm, and the connecting portion to provide for movement of the button contact surface through a first deflection distance in response to a first deflection force. A device can be configured to provide a first restoring force in response to the movement through the first deflection distance. A device can comprise a first spring constant. A device can comprise a relief slot. A relief slot can be disposed in one of the first arm, the second arm, and the connecting portion of a device. A relief slot can provide for one of a reduced first restoring force and a reduced first spring constant relative to an equivalent device lacking a relief slot.

A first deflection distance can be sufficient to actuate a buckle release device. A button contact feature can comprise a button contact feature height. The button contact feature height can be configured to provide buckle housing clearance at the first deflection distance. A device can comprise an inter-arm dimension. In various embodiments, an inter-arm dimension can be configured to provide a clearance fit with respect to a buckle housing. In various embodiments, an inter-arm dimension can be configured to provide a compression fit with respect to a buckle release button. Insertion of a buckle into a device configured to provide a compression fit with respect a buckle release button can produce a first deflection force, and the first restoring force produced by the device in response to the first deflection force can provide buckle release actuation assistance.

In various embodiments, a system for actuating a buckle release is provided. A system can comprise a buckle release device and an attachment device. A buckle release device can comprise an attachment feature configured to receive an

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attachment device. The attachment device can be inserted into the attachment feature and can be removably attached to the attachment feature. An attachment device can comprise one of a key ring, a carabiner, a steel cable loop, a chain, a wire, and a lanyard. A system in accordance with various embodiments can comprise one of a flashlight and a seat belt cutter.

BRIEF DESCRIPTION OF THE DRAWINGS

The subject matter of the present disclosure is particularly pointed out and distinctly claimed in the concluding portion of the specification. A more complete understanding of the present disclosure, however, may best be obtained by referring to the detailed description and claims when considered in connection with the drawing figures.

FIGS. 1A and 1B illustrate front and side views of a prior art buckle fastening system, respectively;

FIGS. 2A and 2B illustrate prior art buckle fastening systems having different buckle release button shapes;

FIGS. 3A and 3B illustrate perspective views of a device for actuating a buckle release button in accordance with various embodiments;

FIG. 4 illustrates a side view of a device for actuating a buckle release button in accordance with various embodiments;

FIG. 5 illustrates a side view of a device for actuating a buckle release button in accordance with various embodiments;

FIG. 6 illustrates a front perspective view of a device for actuating a buckle release button in accordance with various embodiments;

FIG. 7 illustrates a side view of a device for actuating a buckle release button in accordance with various embodiments;

FIGS. 8A and 8B illustrate side and perspective views of a device for actuating a buckle release button in accordance with various embodiments; and

FIGS. 9A and 9B illustrate side views of devices for actuating a buckle release button that include a belt cutter in accordance with various embodiments.

DETAILED DESCRIPTION

The detailed description of exemplary embodiments herein makes reference to the accompanying drawings, which show exemplary embodiments by way of illustration and their best mode. While these exemplary embodiments are described in sufficient detail to enable those skilled in the art to practice the inventions, it should be understood that other embodiments may be realized and that logical and mechanical changes may be made without departing from the spirit and scope of the inventions. Thus, the detailed description herein is presented for purposes of illustration only and not of limitation. For example, the steps recited in any of the method or process descriptions may be executed in any order and are not necessarily limited to the order presented. Furthermore, any reference to singular includes plural embodiments, and any reference to more than one component or step may include a singular embodiment or step. Also, any reference to attached, fixed, connected or the like may include permanent, removable, temporary, partial, full and/or any other possible attachment option. Additionally, any reference to without contact (or similar phrases) may also include reduced contact or minimal contact.

As used herein, the term “actuate” means to cause a device to operate, such as a fastening mechanism release.

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As used herein, the term “spring constant” means an approximation of a factor characteristic of an elastically deformable material in a particular configuration within the elastic limits of the material in the configuration.

As used herein, the term “unitary construction” means constructed of a single piece of material.

With reference to FIGS. 3A and 3B, a device 300 is illustrated. As described herein, device 300 can be used to assist actuation of a buckle fastening system. In accordance with various embodiments, device 300 can comprise a first arm 301, a second arm 302, and a connecting portion 305 disposed between the first arm and the second arm. First arm 301 can have an elongated configuration and define a first axis A-A', and second arm 302 can have an elongated configuration and defines a second axis B-B'. In various embodiments, a first arm, second arm, and/or connecting portion can have a square or rectangular cross section, or they can have a circular, ellipsoid, or other geometric or on-geometric cross section. Device 300 can be configured such that first arm 301 and second arm 302 comprise a laterally-opposed configuration, as illustrated, with distal end 303 of first arm 301 and distal end 304 of second arm 302 configured opposite one another. Connecting portion 305 can comprise a U-shaped segment joining the proximal ends of first arm 301 and second arm 302. In various embodiments, axes A-A' and B-B' of a device such as device 300 can be substantially aligned with one another, or the axes may converge or diverge from the distal ends of the first and second arms to the proximal portion of the arms. In various embodiments, a connecting portion can have other configurations or profiles, such as a rectangular profile or any other profile suitable to provide a first device arm and a second device arm in a laterally-opposed configuration.

First arm 301 and second arm 302 can define a buckle space 306 between the interior surfaces of the arms. Device 300 can comprise a button contact feature 307 extending into the buckle space 306 from the interior surface of first arm 301. Button contact feature 307 can comprise a button contact surface 308 facing toward second arm 302. Button contact feature 307 may be located near the distal end of first arm 301. In various embodiments, first arm 301 may extend distally past the location of button contact feature 307. Button contact feature 307 and button contact surface 308 can be configured to operatively engage a buckle fastening system button, as described in greater detail below.

In various embodiments, device 300 can comprise an attachment feature 309. An attachment feature such as attachment feature 309 can comprise a flange or protrusion configured to facilitate attachment of device 300 to a set of keys, for example, by using an attachment device such as a key ring, carabiner, a steel cable loop, a chain, a wire, or a lanyard. Attachment feature 309 can comprise an aperture 310 through which an attachment device can be inserted. With reference briefly to FIG. 6, a key ring 612 is illustrated inserted into aperture 610 of attachment feature 609 for device 600. With reference once more to FIGS. 3A and 3B, attachment feature 309 can be located on an outer surface of connecting portion 305, first arm 301, or second arm 302, or any other suitable location. In various embodiments, a connecting feature need not comprise a protrusion, and instead can comprise an aperture or other feature of device 300 that does not extend from a surface of device 300.

In various embodiments, device 300 can comprise a relief slot 311. Relief slot 311 can be disposed in one of the first arm 301, the second arm 302, and the connecting portion 305. In various embodiments, relief slot 311 may be disposed in more than one portion of device 300. For example

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and as illustrated, relief slot **311** extends through connecting portion **305** and into proximal portions of first arm **301** and second arm **302**. In various embodiments, a relief slot may also serve as an attachment feature. In various embodiments and as further described below, a relief slot such as relief slot **311** may be configured to reduce one of the first restoring force and the first spring constant of device **300** as compared to an equivalent device at is not configured with a relief slot.

In various embodiments, a device such as device **300** may be manufactured from a polymer material. Polymer materials that may be used can include, for example, high density polyethylene (HDPE), acrylonitrile butadiene styrene (ABS), polypropylene (PP), polyester (PES), polyethylene terephthalate (PET), polyvinyl chloride (PVC), polyamides (PA) including various nylons, polyethylene/acrylonitrile butadiene styrene (PE/ABS), and polycarbonate (PC), polycarbonate/acrylonitrile butadiene styrene (PC/ABS), as well as various resins or materials compatible with various additive manufacturing processes and/or 3D printers, such as Stratasys PolyJet materials. In various embodiments, a device can comprise natural materials such as wood, bamboo, hemp- or algal-based biopolymers, and the like. Natural materials can be used in a composite material, for example, a wood and adhesive laminate plywood). In various embodiments comprising a laminated material, layers may be oriented such that the layer arrangement is visible in a side view. In various embodiments comprising laminate wood or plywood, the grains of the veneers may be configured to permit a suitable level of flexibility and/or a suitable spring constant. Composite materials such as carbon fiber-, graphite fiber-, and graphene fiber-reinforced polymers may be used in a device in accordance with various embodiments. Likewise, a device can comprise metals or metal alloys including steel, titanium, chromium, cobalt-chrome, stainless steel, aluminum, and the like.

In various embodiments, a device such as device **300** can comprise a phosphorescent (and/or photoluminescent) material to provide the device with a capacity to glow in dark conditions. For example, a phosphorescent material such as zinc sulfide or strontium aluminate can be incorporated into the device, such as by incorporation into a polymer composite used to manufacture the device or by applying to the device in a coating. Use of phosphorescent material in a device to confer a glow-in-the-dark characteristic can facilitate a user's ability to locate the device under dark conditions.

In various embodiments, a device such as device **300** may be unitarily constructed, such as by injection molding or additive manufacturing as a single component. In various other embodiments, a device can comprise two or more components attached to one another by various mechanical attachment methods including adhesives, welding, fastening, joinery, hinge, or other mechanical attachment. For example and with reference briefly to FIG. 5, device **500** comprises a hinge **520** configured in the connecting portion **505** between first arm **501** and second arm **502**. Any of a variety of hinge configurations may be suitable for use in a device in accordance with various embodiments of the present disclosure. In various embodiments, a hinge or other mechanical attachment can include a spring configured to bias the first arm and the second arm of the device toward an open position suitable to receive a buckle in buckle space **506**.

With reference again to FIGS. 3A and 3B, the illustrated device **300** comprises a unitary construction. Device **300** can be configured to be elastically deformable in one of the first arm **301**, the second arm **302**, and the connecting portion

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305. The elastically deformable configuration of device **300** can provide for movement of button contact surface **308** through a first deflection distance relative to the position of the second arm **302** in response to a first deflection force. The device can be configured to produce a first restoring force in response to movement through the first deflection distance biased in a direction opposite the first deflection distance. In various embodiments, the first restoring force can be produced as a function of the spring constant of an elastically deformable material used to fabricate the device, for example, for unitarily constructed devices such as device **300**, in response to movement of the device through the first deflection distance. In various other embodiments, the first restoring force can be produced by a spring or other component of a mechanical connection, such as the hinge mechanism illustrated for device **500** (FIG. 5).

In various embodiments, the first deflection distance can be in a direction toward the second arm. For example and with reference now to FIG. 4, typical buckle housings used for buckle fastening mechanisms may have buckle housing depths of from about 0.75 in to about 1.25 in. A device such as device **400** can be configured such that distance D1 (i.e., the inter-arm dimension) provides for clearance of a typical buckle housing relative to a buckle housing depth dimension, enabling an operator to insert device **400** around a buckle housing without deflection or deformation of the device. The operator may position device **400** relative to the buckle so that button contact feature **407** is positioned over the buckle release button. When device **400** is suitably positioned, the operator may squeeze device **400** to compress the device, engaging button contact surface **408** with the underlying buckle release button as the button contact surface travels through the first deflection distance in response to the first deflection force provided by the operator. In operation, the first deflection distance may be suitable to actuate the buckle release button, releasing the buckle from the latched condition to the unlatched condition. A device may be configured to provide a first deflection distance suitable to produce a sufficient button travel distance for various buckle release buttons. For example, the button travel distance required for actuation of various buckle release buttons can be from about 0.10 in to about 0.40 in. A device may also be configured to provide any additional deflection distance necessary to provide a device with a clearance fit (i.e., the distance between the button contact surface and the button surface). In various embodiments, a device may be configured to provide a first deflection distance within the range of from about 0.10 in to about 1.30 in. In various embodiments, a device can be configured to be compatible with a particular buckle fastening system or with selected buckle fastening systems, and different devices can be figured to operate with different buckle fastening systems. A device in accordance with various embodiments can be configured to provide a first deflection distance sufficient to produce actuation of various buckle release buttons for any buckle fastening system no existence or that may be produced in the future.

In operation of a device in accordance with the embodiment described above providing a clearance fit relative to a buckle fastening system, an operator must overcome the restoring force produced by the device in response to elastic deformation of the device and movement of the button contact surface through the first deflection distance. In various embodiments, the restoring force and/or spring constant of the device may depend on the configuration of the device, including, for example, the materials, dimensions, and other features of the device. Additionally, in

operation of a device in accordance with the embodiment described above, the operator must overcome the force biasing the buckle release button toward the latched position. The restoring force and/or spring constant of a device may depend on the configuration of the device, including the material used, the shape and dimensions of the device, the presence, location, and configuration of features such as a relief slot or a hinge, and the like. In various embodiments, a device can be configured such that the force required to produce a first deflection distance suitable to actuate a buckle release button can be from about 1.0 newtons to about 8.0 newtons. For example, the force required to produce the first deflection distance may be about 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, or about 8.0 newtons. In various embodiments, the force required to produce a first deflection distance suitable to actuate a buckle release button can be produced by a device operator with a grip force that is lower than that of an average population to allow a device to be operated by individuals with various physical conditions that may negatively affect grip force. For example, a grip force required to produce a first deflection distance suitable to actuate a buckle release button can be less than about 50 N, or less than about 40 N, or less than about 30 N, or less than about 25 N, or less than about 20 N, or less than about 15 N, or less than about 10 N. In various embodiments, a device can comprise a relief slot such as relief slot **311** (FIG. 3) that may be configured to provide a reduced first restoring force and/or spring constant as compared to an equivalent device comprising the same material and the same dimensions but lacking the relief slot.

In accordance with various embodiments of the present disclosure, a device can be configured to provide suitable strength and structural rigidity for durability and reliable operation of the device over many buckle release cycles. A device can also be configured to provide a restoring force and/or spring constant during operation of the device to produce a first deflection distance that is sufficiently low that it is not prohibitive to users. For examples, users of a device may have certain physical or medical limitations that present challenges to compression of a buckle release button without the aid of a device as disclosed herein, or to compression of a device such as those disclosed herein that do not include a feature configured to reduce the restoring force and/or spring force constant such as a relief slot or a hinge. A relief slot can be disposed in one of the first arm, the second arm, and the connecting portion. The configuration of a relief slot, including the position and size can be adjusted to “tune” the restoring force and/or spring force constant of a device. For example, a longer or a wider relief slot can produce a decreased spring force constant compared to a shorter or a narrower relief slot.

In various embodiments, a device can be configured with relief areas. A relief area may be provided for various reasons, such as to reduce the amount of material required to manufacture a device and/or to reduce the occurrence of manufacturing irregularities such as sink marks or depressions that may occur in thicker portions of injection molded devices. With reference briefly to FIGS. 8A and 8B, a device **800** with a relief area **850** is illustrated. Relief area **850** is defined by a perimeter wall **851** and an inner wall **852**. Device **800** can comprise a pair of relief areas such as relief area **850** configured on opposite sides of first arm **801**.

In various embodiments, a configuration of a device such as device **400** (FIG. 4) can provide an operator with certain benefits facilitating exertion of sufficient force to produce the first deflection distance. For example, the configuration

of the device can provide enhanced ergonomics, such as by providing added surface area by which an operator can exert force on the buckle release button, permitting engagement of additional fingers or portions of the operator’s hand(s), or by providing a mechanical advantage, such as by extension of the distal ends of the first arm and/or the second arm distally from the connecting portion (i.e., the fulcrum) to produce enhanced leverage (i.e., via a class two lever) with the operator able to exert force distally to the button (i.e., the load).

In various other embodiments, a device such as device **400** can be configured such that distance **D1** provides for a compression fit around a buckle housing and/or buckle release button. For example, a device can be configured such that distance **D1** is less than a buckle housing depth and/or a distance from the front face of a buckle button in a latched position and the back of the buckle housing. In such an embodiment, insertion of a device around a buckle will produce a first deflection distance resulting in the buckle contact surface moving away from the second arm of the device. A tapered front surface of the button contact feature may facilitate opening of the arms of the device and movement of the buckle contact surface through a first deflection distance in response to contact with a button housing and lateral pressure and movement of the device relative to the buckle housing to produce insertion of the buckle. The first restoring force produced by the device can provide buckle release actuation assistance, with the bias of the device in a direction opposite of that producing the first deflection distance tending to produce depression of a buckle release button when the button contact surface engages the button. In various embodiments, a device can be configured such that the restoring force is sufficient to actuate a buckle release button, or a device can be configured such that the restoring force is sufficient partially actuate a release button, and further compressive force must be provided by an operator to fully actuate a buckle release button. In such embodiments, the compressive force provided by an operator may be less than that required for an equivalent device configured to provide a clearance fit rather than a compression fit.

In various embodiments, the button contact feature may be configured to engage and/or actuate a buckle release button of one or more buckle fastening systems. For example, the button contact surface may be configured with a length and a width suitable to engage a button surface of one or more buckle fastening systems without interference from a surrounding buckle housing. For example, a button contact surface may be configured with a length and width of about 0.5 in in each dimension, and such a button configuration may be compatible with square or rectangular buttons as well as round, oval, or irregularly shaped buttons with dimensions larger than that of the button contact surface. Likewise, a button contact feature may be configured with a button contact feature height **H** (FIG. 4) suitable to provide actuation of one or more buckle fastening system buttons while preventing contact or interference between the buckle housing and the inner surface of the first arm (i.e., buckle housing clearance) during operation, such as when the button contact feature has moved through a first deflection distance. Moreover, a device may be configured with a buckle space depth **D2** suitable to prevent interference between an inner wall of the connecting portion and the lateral wall of a buckle housing, and/or to provide sufficient space for an operator to insert one or more fingers between the inner wall of the connecting portion and the buckle housing to facilitate removal of the device from the buckle

following actuation of the buckle release button. In various embodiments, D2 can be from about 1.25 in to about 2.5 in.

A device disclosed herein may provide certain advantages, such as reducing pressure transmitted from the buckle housing to a restrained child or passenger during actuation of the buckle release button due to the laterally-opposed configuration of the first arm and the second arm. In contrast, simple operation of a button by depression with an operator's finger or other prior art tools for pressing a button that lack an opposing arm either transmit pressure through the buckle housing to the person under the buckle housing or require the operator to use his hand or fingers to provide an opposing force. In addition, the devices disclosed herein do not require attachment to the buckle or an associated strap, as required by other prior art devices. Instead, the devices disclosed herein are designed to be removably inserted around a buckle with each use, with the device remaining under the control and supervision of a mature operator, for example, a driver or parent, thereby preventing inadvertent or unsupervised operation by a restrained child or other passenger at inappropriate moments.

In various embodiments, a system that can be used to assist actuation of a buckle release button is provided. A system can comprise a device in accordance with the present disclosure. A system can further comprise an attachment device. The attachment device can be connected to the attachment feature. An attachment device can comprise a ring, a chain, a carabiner, a wire, a cable, a lanyard, a strap, or similar device. An attachment device can be any device suitable to attach the device, for example, to an operator's key set or other similarly accessible and portable accessory.

In various embodiments, a system can comprise a light. A light can be incorporated in a buckle release device. For example and with reference to FIG. 6, a light 630 can be inserted into distal end of first arm 601 of device 600. A light can also be inserted in other locations in a device, such as the second arm or the connecting portion. A system can comprise, for example, an LED flashlight removably inserted into a buckle release device. A system can further comprise a battery for a light inserted into the buckle release device. The device can be configured so that the light and/or battery are removably inserted so that the battery can be replaced as needed. A system can further comprise a switch for operation of a light, such as switch 631. A switch may be co-located with the light and the buckle release device configured to permit access to the switch on the inserted light, or the switch may be located remotely from the light, with wiring or other circuitry running between the light and the switch. A switch may be located in a position that provides for convenient operation of the light during operation of the buckle release device, such as insertion of the buckle release device over a buckle.

In various embodiments, a system can comprise a whistle. A whistle may be attached to a buckle release device or integrated into a buckle release device. A whistle may provide an operator with convenient access to a safety whistle for use in emergency situations.

In various embodiments, a system can comprise a glass breaker. A glass breaker can comprise a pointed steel tip, such as a tungsten carbide tip, attached to the buckle release device. A glass breaker can also comprise an automatic center punch tool, such as a spring loaded automatic center punch. A glass breaker may be attached, for example, at the distal end of the first arm or the second arm or outer wall of the connecting portion.

In various embodiments, a system also comprise a bottle opener. With reference to FIG. 7, a system comprise a device

700 with a bottle opener 740 located in an outer wall of first arm 701. A system can comprise a device with a bottle opener located in other locations of the device, such as the second arm or the connecting portion.

In various embodiments, a system can comprise a seat belt cutter. A seat belt cutter can be integrated into a buckle release device for use in emergency situations. Referring now to FIGS. 9A and 9B, devices with integrated seat belt cutters are shown. Device 900A illustrated in FIG. 9A includes a seat belt cutter comprising blade 960A embedded in first arm 901A of device 900A with a belt slot 961A opening into the interior of the device. Device 900B illustrated in FIG. 9B includes a seat belt cutter comprising blade 960B with a belt slot 961B opening toward the top of first arm 901B. In operation, a device such as device 900A or 900B comprising a seat belt cutter is positioned such that a seat belt is inserted into the opening of a belt slot such as 961A or 961B, and the device is moved relative to the inserted seat belt such that the blade (e.g., blade 960A or 960B) contacts and cuts the inserted seat belt. In various embodiments, a seat belt cutter may be configured so as to minimize risk of inadvertent contact with clothing or a child or person restrained by a buckle fastening mechanism during use of the buckle release device. For example a seat belt cutter may comprise a removable safety gate that can be opened to expose the seat belt cutter blade and permit insertion of a seat belt into the cutter.

Example 1

Non-Destructive Deflection Test Data for Device Prototypes Constructed from ABS and Polypropylene

Prototypes of a device for actuating a buckle release in accordance with various embodiments of the present disclosure were manufactured from acrylonitrile butadiene styrene (ABS) and from polypropylene and subjected to non-destructive testing to determine the pressure required to achieve various deflections of the button contact surface. The results are shown in Table 1.

TABLE 1

Results of non-destructive deflection distance testing.		
Pressure	Polypropylene Deflection	ABS Deflection
0.42 lbs.	0.05 in	0.10 in
0.98 lbs.	0.16 in	0.24 in
1.40 lbs.	0.31 in	0.46 in

For the polypropylene prototype, 1.63 lbs. of pressure was required to produce sufficient deflection of the button contact surface to contact the opposite arm (0.56 inches of deflection). For the ABS prototype, 1.74 lbs. of pressure was required to produce sufficient deflection of the button contact surface to contact the opposite arm (0.67 inches of deflection).

Benefits, other advantages, and solutions to problems have been described herein with regard to specific embodiments. Furthermore, the connecting lines shown in the various figures contained herein are intended to represent exemplary functional relationships and/or physical couplings between the various elements. It should be noted that many alternative or additional functional relationships or physical connections may be present in a practical system.

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However, the benefits, advantages, solutions to problems, and any elements that may cause any benefit, advantage, or solution to occur or become more pronounced are not to be construed as critical, required, or essential features or elements of the inventions. The scope of the invention is accordingly to be limited by nothing other than the appended claims, in which reference to an element in the singular is not intended to mean “one and only one” unless explicitly so stated, but rather “one or more.” Moreover, where a phrase similar to “at least one of A, B, or C” is used in the claims, it is intended that the phrase be interpreted to mean that A alone may be present in an embodiment, B alone may be present in an embodiment, C alone may be present in an embodiment, or that any combination of the elements A, B and C may be present in a single embodiment; for example, A and B, A and C, B and C, or A and B and C. Different cross-hatching is used throughout the figures to denote different parts but not necessarily to denote the same or different materials.

Devices, systems, and methods are provided herein. In the detailed description herein, references to “one embodiment”, “an embodiment”, “an example embodiment”, etc., indicate that the embodiment described may include a particular feature, structure, or characteristic, but every embodiment may not necessarily include the particular feature, structure, or characteristic. Moreover, such phrases are not necessarily referring to the same embodiment. Further, when a particular feature, structure, or characteristic is described in connection with an embodiment, it is submitted that it is within the knowledge of one skilled in the art to affect such feature, structure, or characteristic in connection with other embodiments whether or not explicitly described. After reading the description, it will be apparent to one skilled in the relevant art(s) how to implement the disclosure in alternative embodiments.

Furthermore, no element, component, or method step in the present disclosure is intended to be dedicated to the public regardless of whether the element, component, or method step is explicitly recited in the claims. No claim element herein is to be construed under the provisions of 35 U.S.C. 112(f), unless the element is expressly recited using the phrase “means for.” As used herein, the terms “comprises”, “comprising”, or any other variation thereof, are intended to cover a non-exclusive inclusion, such that a process, method, article, or apparatus that comprises a list of elements does not include only those elements but may include other elements not expressly listed or inherent to such process, method, article, or apparatus.

What is claimed is:

1. A device for actuating a buckle release button comprising:

- a first arm, wherein the first arm comprises a first end and a button contact feature with a button contact surface, and wherein the first arm defines a first axis;
- a second arm, wherein the second arm defines a second axis, and wherein the first axis and the second axis are substantially parallel;
- a connecting portion comprising a U-shape disposed between the first arm and the second arm, wherein the first arm and the second arm comprise a laterally-opposed configuration; and
- an attachment feature comprising one of a flange or a protrusion having an aperture configured to insertably receive an attachment device, wherein the attachment feature is disposed on the connecting portion and configured to facilitate attachment of the device to the attachment device;

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wherein the device is unitarily constructed, and wherein the device comprises a configuration suitable to be gripped about the first arm and the second arm by an operator's hand.

2. The device of claim 1, wherein the device is configured to be elastically deformable in the connecting portion to provide for movement of the button contact surface through a first deflection distance in response to a first deflection force.

3. The device of claim 2, wherein the first deflection distance is sufficient to actuate a buckle release button.

4. The device of claim 2, wherein the button contact feature comprises a button contact feature height, and wherein the button contact feature height is configured to provide buckle housing clearance at the first deflection distance.

5. The device of claim 2, wherein the device comprises an inter-arm dimension.

6. The device of claim 5, wherein the inter-arm dimension is configured to provide a clearance fit with respect to a buckle housing.

7. The device of claim 5, wherein the inter-arm dimension is configured to provide a compression fit with respect to a buckle release button.

8. The device of claim 7, wherein insertion of a buckle into the device produces the first deflection force, and wherein the first restoring force produced by the device provides a buckle release actuation assistance.

9. A device comprising:

- a first arm, wherein the first arm comprises a first end and a button contact feature with a button contact surface, and wherein the first arm defines a first axis and a first inner surface;
- a second arm, wherein the second arm comprises a second end and defines a second axis, and wherein the first axis and the second axis are substantially parallel; and
- a connecting portion disposed between the first arm and the second arm, wherein the connecting portion comprises one of a flange or a protrusion having an aperture configured to insertably receive an attachment device; wherein one of the first arm, the second arm, and the connecting portion comprises a substantially rectangular cross section,
- wherein the button contact surface and the first inner surface are substantially parallel,
- wherein the device is configured to actuate a buckle release button, and
- wherein the device has a unitary construction.

10. The device of claim 9, wherein the first arm comprises a first surface defining a first plane and the second arm comprises a second surface defining a second plane, and wherein the first plane and the second plane are substantially parallel.

11. The device of claim 9, wherein the device defines a buckle space depth and an interarm distance between a first inner surface of the first arm and a second inner surface of the second arm, and wherein the interarm distance is substantially the same at a plurality of points within the buckle space depth.

12. A device comprising:

- a first arm, wherein the first arm comprises a first end and a button contact feature with a button contact surface and a button contact feature first arm attachment region, and wherein the first arm defines a first axis;
- a second arm, wherein the second arm comprises a second end and defines a second axis; and

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a connecting portion disposed between the first arm and
the second arm, wherein the connecting portion com-
prises one of a flange or a protrusion having an aperture
configured to insertably receive an attachment device;
wherein the button contact feature extends from an inner 5
surface of the first arm and defines a button contact
feature axis oriented substantially perpendicularly to
the first axis,
wherein the button contact feature comprises a tapered
front surface tapering toward an interior of the device 10
from the first end of the first arm to the button contact
feature, and
wherein the device is configured to actuate a buckle
release button.
13. The device of claim **12**, wherein the button contact 15
feature comprises a substantially rectangular cross section.
14. The device of claim **13**, wherein the button contact
surface comprises a first surface area that is smaller than a
button contact feature first arm attachment region cross
section area. 20

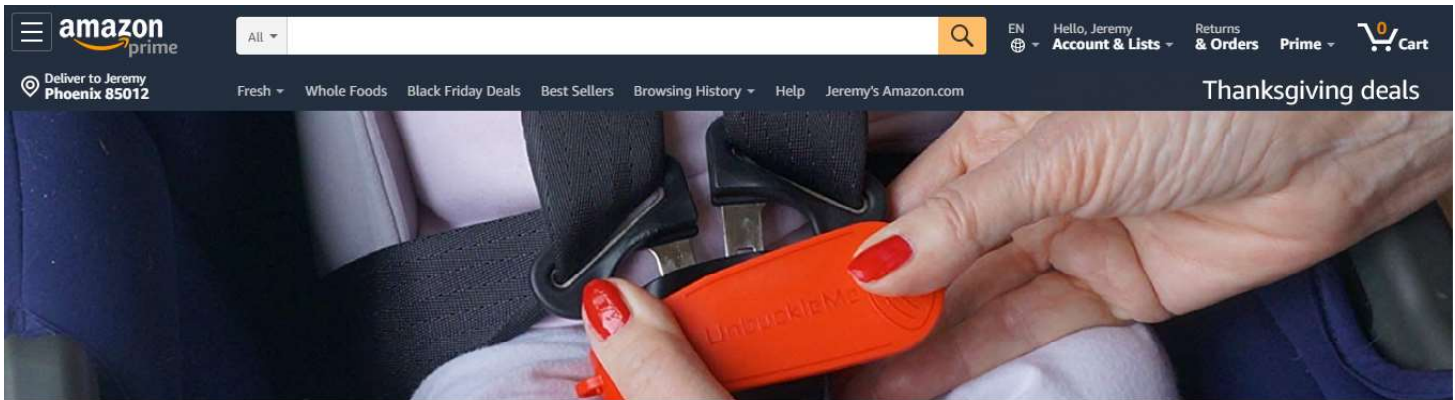
* * * * *

Exhibit 2

Claim Chart for Claim 1 of the '298 Patent

Element Label	Claim Element
A	A device for actuating a buckle release button comprising:
B	a first arm, wherein the first arm comprises
C	a first end and
D	a button contact feature with
E	a button contact surface, and
F	wherein the first arm defines a first axis
G	a second arm,
H	wherein the second arm defines a second axis, and
I	wherein the first axis and the second axis are substantially parallel;
J	a connecting portion comprising a U-shape disposed between the first arm and the second arm,
K	wherein the first arm and the second arm comprise a laterally-opposed configuration;
L	an attachment feature comprising one of a flange or a protrusion having
M	an aperture configured to insertably receive an attachment device,
N	wherein the attachment feature is disposed on the connecting portion and configured to facilitate attachment of the device to an attachment device;
O	wherein the device is unitarily constructed, and
P	wherein the device comprises a configuration suitable to be gripped about the first arm and the second arm by an operator's hand.

Exhibit 3



UnbuckleMe - Makes it Easy to Unbuckle a Child's Car Seat - Easy Buckle Release Tool for Parents, Grandparents & Older Children - Invented & Patented by a Grandma - Made in USA (Red)

★★★★★ 808 customer reviews

- Designed by an Occupational Therapist who has thumb arthritis
 - Eliminates thumb pain & broken nails from unbuckling the car seat
 - Soft, grippy surface for comfort & ease of use
 - The PATENTED unbuckling product tested to reduce the force to unbuckle by more than 50%
 - Car seat accessory that works on ALL child car seat buckles
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a Child's Car Seat - Easy Buckle Release

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a Child's Car Seat - Easy Buckle Release

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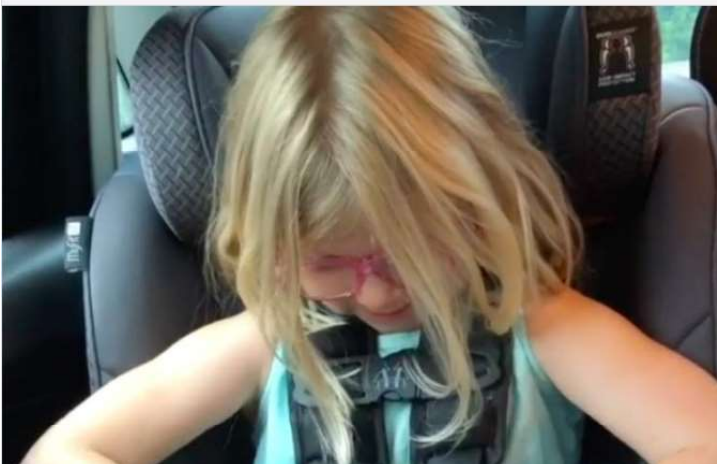
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**Designed by an Occupational
Therapist, who is also a
grandmother with arthritis!**

SHOP NOW

**The only product proven to reduce
the force to unbuckle by more than
50%.**

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- Your Orders
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- Amazon Prime
- Returns & Replacements
- Manage Your Content and Devices
- Amazon Assistant
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Amazon Music
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Start a Selling Account

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Scalable Cloud Computing Services

East Dane
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Amazon Photos
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Ring
Smart Home Security Systems

Amazon Advertising
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Real-Time Crime & Safety Alerts

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Exhibit 4

amazon prime Baby ▾

EN Hello, Jeremy Account & Lists Returns & Orders Prime

Deliver to Jeremy Phoenix 85012 Fresh ▾ Whole Foods Black Friday Deals Best Sellers Browsing History ▾ Help Jeremy's Amazon.com \$10 off \$50 at Whole Foods

Baby Registry Best Sellers Deals Strollers Car Seats Nursery Feeding Clothing Activity & Gear Toys Diapering Health & Safety Gifts

amazon assistant 30-Day Price Tracker

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UnbuckleMe - Makes it Easy to Unbuckle a Child's Car Seat - Easy Buckle Release Tool for Parents, Grandparents & Older Children - Invented & Patented by a Grandma - Made in USA (Aqua)

by UnbuckleMe

★★★★★ 808 ratings | 12 answered questions

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Size: 1 Pack

1 Pack 2 Pack

Color: Aqua



- Designed by an Occupational Therapist who has thumb arthritis
 - Eliminates thumb pain & broken nails from unbuckling the car seat
 - Soft, grippy surface for comfort & ease of use
 - The PATENTED unbuckling product tested to reduce the force to unbuckle by more than 50%
 - Car seat accessory that works on ALL child car seat buckles
- See more product details

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\$14.99

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FREE delivery: Wednesday Details

Deliver to Jeremy - Phoenix 85012

In Stock.

Qty: 1 ▾

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Add to Baby Registry

Add to your Dash Buttons

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Have one to sell?

Frequently bought together



Total price: \$44.93

✓ **This item:** UnbuckleMe - Makes it Easy to Unbuckle a Child's Car Seat - Easy Buckle Release Tool for Parents... \$14.99

✓ Bucklebee - Easy Buckle Release Aid for Children and Caregivers \$14.95

✓ The Car Seat Key - Easy CAR SEAT UNBUCKLE by NAMRA Made in USA (Teal) \$14.99

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★★★★★ 600
\$14.98 ✓prime

LIVING PROOF Full Dry Volume Blast, 7.5 oz
★★★★★ 453
\$29.00 ✓prime

Seatbelt Adjuster, Andul Comfort Universal Auto Shoulder Neck Protector Locking Clip...
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Car Seat Travel Belt | Car Seat Travel Strap to Convert Your Car Seat and Carry-on ...
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Page 1 of 63



The Car Seat Key - Easy CAR SEAT UNBUCKLE by NAMRA Made in USA (Teal)
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Buckle Pal by eZtotZ - The Easy Way to Unbuckle Carseats - Made in USA - Helps Kids...
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UNVT.MCDWbb 1pcs Blue Car Seat Key for Kids, Easy Car Seat Unbuckle for Children
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Product Description

UnbuckleMe®

UnbuckleMe is the original, award-winning solution for parents and grandparents who struggle to unbuckle child car seats! Easily slides around the buckle and uses leverage to make it more than 50% easier to unbuckle. Invented by an Occupational Therapist and a Child Passenger Safety Technician (CPST). This product is key to ensuring that ALL adults can easily and comfortably unbuckle their kids. US Patents Issued Feb 2019.



Unbuckle your child's car seat with ease!

Child car seat buckles require 9 lbs of pressure, which makes them hard to unbuckle for:

- Parents or grandparents with arthritis, carpal tunnel, tendonitis and other hand/wrist conditions
- Moms and caregivers with long fingernails
- Older siblings (4yrs+) who are ready to help out when the car is parked



Lightweight and Flexible



Invented by a Grandma



UnbuckleMe has a flexible design, that slips easily underneath the buckle. It does not attach to the carseat for safety, so that kids can't unbuckle themselves. Attach it to a keychain or diaper bag, or store in a safe place in the car (like the side door pocket, glove compartment, or back pocket of the driver's seat). When not in use, keep out of reach of children.



Patented and Award Winning

The *Family Choice Awards* recognize the best in children's and parenting products. Now in its 22nd year, the *Family Choice Awards* is one of the most coveted, family friendly consumer award programs in the nation. As a new product, UnbuckleMe was a winner in March 2018, awarded by Family Magazine Group. US Utility & Design Patents Issued by USPTO in Feb 2019.



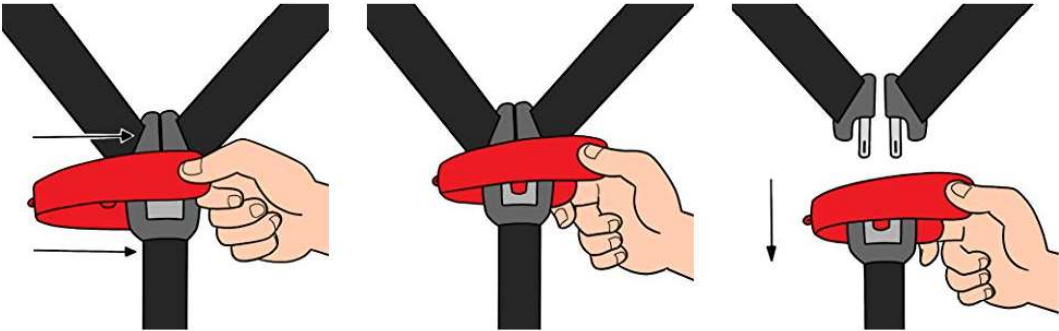
UnbuckleMe was invented by an Occupational Therapist, who is also a grandmother with arthritis in her thumb. She was frustrated that she could not unbuckle her granddaughter's car seat, and decided to invent a solution. She is working with her daughter (a Child Passenger Safety Technician) to bring UnbuckleMe to all people who struggle with carseat buckles.



Carpool Line Must-Have

Busy families with multiple kids love having a convenient tool to give their children the power to unbuckle themselves, when the car is parked. Speed up the carpool line! When not in use, be sure to keep UnbuckleMe out of reach of children, so they cannot unbuckle themselves when the car is moving. (Children 4+ usually have the dexterity to use this product.)

UnbuckleMe is EASY TO USE



1. LIFT & SLIDE

Lift lever arm to slide around buckle

2. CENTER & PINCH (OR SQUEEZE)

Center the peg & pinch ends together. To create leverage, press on the END of the lever arm (not over the red button).

3. PULL DOWN

Pull down to release the buckle



Support our Small Business

UnbuckleMe was invented by a mom and daughter team from Texas. We are a 100% women-owned business and we are proud to have invented a product that makes people's lives easier. We love customer reviews, please tell us what you think!

Product information

Size: 1 Pack | Color: Aqua

Technical Details

Item Weight	0.64 ounces
Product Dimensions	3.7 x 1.3 x 1.7 inches
UPC	863185000438
Safety warning	Do not attach to any part of the car seat. When not in use, keep out of reach of children. This is not a toy, and is intended for use by or under adult supervision.
Material Type	Plastic
Material free	BPA Free
Additional product features	Soft, grippy top surface for superior comfort and function
Number of items	1
Best uses	Unbuckle children from the car seat
Batteries required	No

Additional Information

ASIN	B07JJRVXJ1
Customer Reviews	★★★★★ 803 customer reviews
Amazon Best Sellers Rank	#7,265 in Baby (See Top 100 in Baby) #281 in Child Safety Car Seat Accessories
Shipping Weight	0.8 ounces (View shipping rates and policies)

Feedback

Would you like to tell us about a lower price?

Videos


Videos for this product



0:16

Customer Review: Great help

Christopher



0:07

Customer Review: Saved my sanity

Bobbi



0:34

UnbuckleMe makes it 50% easier to unbuckle your kids

Amazon Seller

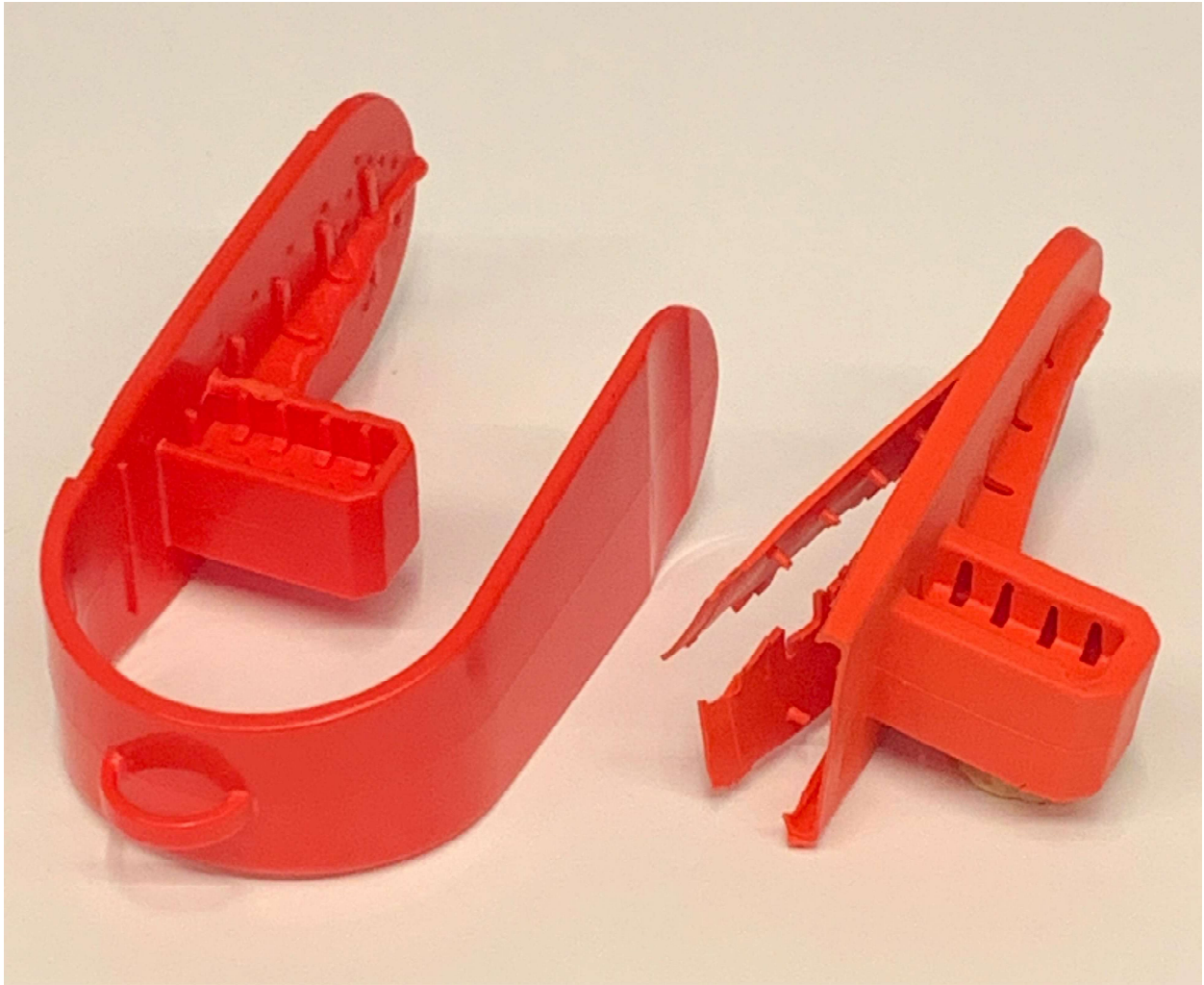
Upload your video

Important information

Safety Information
Do not attach to any part of the car seat. When not in use, keep out of reach of children. This is not a toy, and is intended for use by or under adult supervision.

Legal Disclaimer
UnbuckleMe should not be attached to any part of the car seat. When not in use, UnbuckleMe should remain out of reach of children to ensure that they cannot unbuckle themselves at inappropriate times. Under all circumstances, it should be used under adult supervision. B&B Solutions LLC will not be held responsible for any injuries sustained while using this product.

Exhibit 5

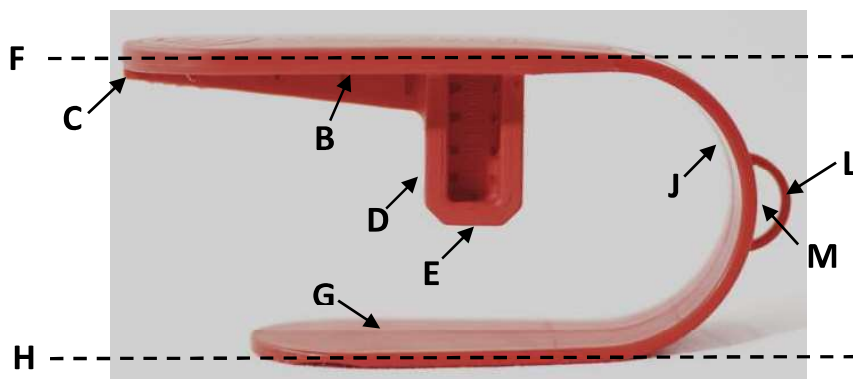


Accused Product with overmolded layer removed
("Base Device")

Removed overmolded layer

Exhibit 6

Accused Product – with overmolded layer



Accused Product – overmolded layer removed ("Base Device")

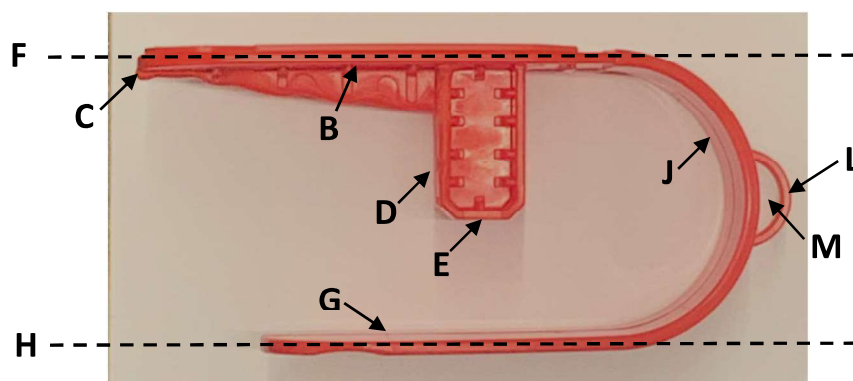


Figure 8A of '298 Patent

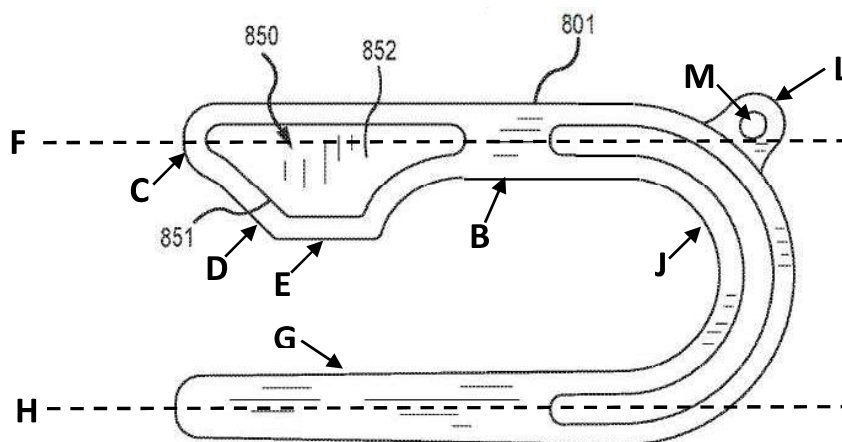


FIG.8A

Exhibit 7

UnbuckleMe™

SHOP HOW IT WORKS PRESS ABOUT US FIND YOUR LOCAL STORE

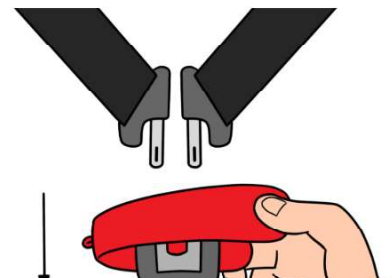
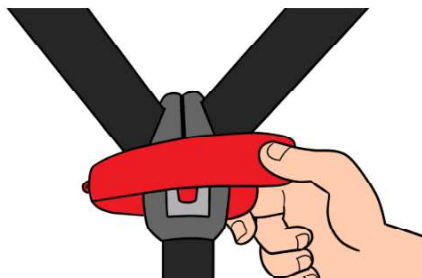
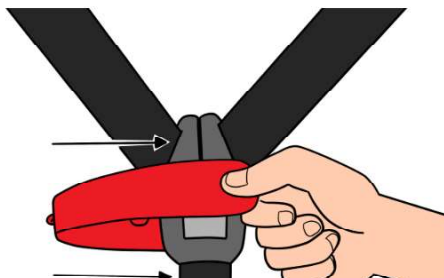


★ REVIEWS

UnbuckleMe uses leverage to make it 50% easier to unbuckle child car seats.

It's a GAMECHANGER for:

- Grandparents, or anyone with weakness in their hands (carpal tunnel, arthritis)
- Parents of older kids (4-6 yrs) who want to give their kids the independence to unbuckle themselves (in the school drop-off line!) Just keep it out of reach when the car is moving.
- Moms with long fingernails, who are tired of breaking them on car seat buckles!





Learn More about How it Works

^ The Science: Leverage

UnbuckleMe uses a type II lever to reduce the force required to unbuckle by more than 50% (Note: this has been tested and confirmed). Leverage is critical to creating a mechanical advantage, and thereby lowering the amount of force needed to unbuckle.









- Occupational Therapy: Protect Your Thumbs
- Day to Day: Easy Storage
- The Law: Federal Motor Vehicle Safety Standards

ABOUT US

UnbuckleMe was invented by an Occupational Therapist, and brought to market by a mother-daughter team.

Read About Our Journey



CUSTOMER SUPPORT

Frequently Asked Questions

Retail Store Locator

Shipping & Returns






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Wholesale

STAY IN TOUCH

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Exhibit 8


12/27

UnbuckleMe™

SH

Save

★ REVIEWS



DESCRIPTION

Designed by an Occupational Therapist, UnbuckleMe applies leverage to unhook a child's car seat buckle by more than 50% on most buckles. It is an accessory that remains

863185000438.6

Question? Send us a message!

Exhibit 9

HOME / UNBUCKLEME

UnbuckleMe

★★★★★ 26 Reviews

UnbuckleMe is a small plastic tool that makes it EASY to unbuckle a child's car seat buckle. Essential for parents, grandparents and older children who lack thumb strength, or even those with long fingernails. Works on all push-button car seat buckles. Free US Shipping with orders of 2 or more.

Color Strawberry Red CLEAR

\$14.99

- 1 + **ADD TO CART**

[f](#) [t](#) [e](#) [p](#) [g](#) [t](#)

DESCRIPTION

ADDITIONAL INFORMATION

REVIEWS

Designed by an Occupational Therapist, UnbuckleMe applies leverage to reduce the force required to unbuckle a child's car seat buckle by more than 50% on most buckles. It is an accessory that remains detached from the car seat, for safety reasons, but is small enough to store anywhere in the car, or attach to a keychain or diaper bag. It works on any push-button buckle used by infant and child car seat manufacturers including Clek, Cybex, Chicco, Britax, Graco, UPPAbaby, Nuna, Recaro, Diono, Evenflo, Cosco, Safety 1st, Maxi-Cosi and many others.

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CIVIL COVER SHEET

The JS 44 civil cover sheet and the information contained herein neither replace nor supplement the filing and service of pleadings or other papers as required by law, except as provided by local rules of court. This form, approved by the Judicial Conference of the United States in September 1974, is required for the use of the Clerk of Court for the purpose of initiating the civil docket sheet. (SEE INSTRUCTIONS ON NEXT PAGE OF THIS FORM.)

I. (a) PLAINTIFFS

(b) County of Residence of First Listed Plaintiff _____
(EXCEPT IN U.S. PLAINTIFF CASES)

(c) Attorneys (Firm Name, Address, and Telephone Number)

DEFENDANTS

County of Residence of First Listed Defendant _____
(IN U.S. PLAINTIFF CASES ONLY)

NOTE: IN LAND CONDEMNATION CASES, USE THE LOCATION OF THE TRACT OF LAND INVOLVED.

Attorneys (If Known)

II. BASIS OF JURISDICTION (Place an "X" in One Box Only)

- ☐ 1 U.S. Government Plaintiff
- ☐ 2 U.S. Government Defendant
- ☐ 3 Federal Question
(U.S. Government Not a Party)
- ☐ 4 Diversity
(Indicate Citizenship of Parties in Item III)

III. CITIZENSHIP OF PRINCIPAL PARTIES (Place an "X" in One Box for Plaintiff and One Box for Defendant)

- | | PTF | DEF | | PTF | DEF |
|---|----------------------------|----------------------------|---|----------------------------|----------------------------|
| Citizen of This State | <input type="checkbox"/> 1 | <input type="checkbox"/> 1 | Incorporated or Principal Place of Business In This State | <input type="checkbox"/> 4 | <input type="checkbox"/> 4 |
| Citizen of Another State | <input type="checkbox"/> 2 | <input type="checkbox"/> 2 | Incorporated and Principal Place of Business In Another State | <input type="checkbox"/> 5 | <input type="checkbox"/> 5 |
| Citizen or Subject of a Foreign Country | <input type="checkbox"/> 3 | <input type="checkbox"/> 3 | Foreign Nation | <input type="checkbox"/> 6 | <input type="checkbox"/> 6 |

IV. NATURE OF SUIT (Place an "X" in One Box Only)

Click here for: [Nature of Suit Code Descriptions.](#)

CONTRACT	TORTS	FORFEITURE/PENALTY	BANKRUPTCY	OTHER STATUTES
<input type="checkbox"/> 110 Insurance <input type="checkbox"/> 120 Marine <input type="checkbox"/> 130 Miller Act <input type="checkbox"/> 140 Negotiable Instrument <input type="checkbox"/> 150 Recovery of Overpayment & Enforcement of Judgment <input type="checkbox"/> 151 Medicare Act <input type="checkbox"/> 152 Recovery of Defaulted Student Loans (Excludes Veterans) <input type="checkbox"/> 153 Recovery of Overpayment of Veteran's Benefits <input type="checkbox"/> 160 Stockholders' Suits <input type="checkbox"/> 190 Other Contract <input type="checkbox"/> 195 Contract Product Liability <input type="checkbox"/> 196 Franchise	PERSONAL INJURY <input type="checkbox"/> 310 Airplane <input type="checkbox"/> 315 Airplane Product Liability <input type="checkbox"/> 320 Assault, Libel & Slander <input type="checkbox"/> 330 Federal Employers' Liability <input type="checkbox"/> 340 Marine <input type="checkbox"/> 345 Marine Product Liability <input type="checkbox"/> 350 Motor Vehicle <input type="checkbox"/> 355 Motor Vehicle Product Liability <input type="checkbox"/> 360 Other Personal Injury <input type="checkbox"/> 362 Personal Injury - Medical Malpractice PERSONAL INJURY <input type="checkbox"/> 365 Personal Injury - Product Liability <input type="checkbox"/> 367 Health Care/Pharmaceutical Personal Injury Product Liability <input type="checkbox"/> 368 Asbestos Personal Injury Product Liability PERSONAL PROPERTY <input type="checkbox"/> 370 Other Fraud <input type="checkbox"/> 371 Truth in Lending <input type="checkbox"/> 380 Other Personal Property Damage <input type="checkbox"/> 385 Property Damage Product Liability	<input type="checkbox"/> 625 Drug Related Seizure of Property 21 USC 881 <input type="checkbox"/> 690 Other LABOR <input type="checkbox"/> 710 Fair Labor Standards Act <input type="checkbox"/> 720 Labor/Management Relations <input type="checkbox"/> 740 Railway Labor Act <input type="checkbox"/> 751 Family and Medical Leave Act <input type="checkbox"/> 790 Other Labor Litigation <input type="checkbox"/> 791 Employee Retirement Income Security Act IMMIGRATION <input type="checkbox"/> 462 Naturalization Application <input type="checkbox"/> 465 Other Immigration Actions	<input type="checkbox"/> 422 Appeal 28 USC 158 <input type="checkbox"/> 423 Withdrawal 28 USC 157 PROPERTY RIGHTS <input type="checkbox"/> 820 Copyrights <input type="checkbox"/> 830 Patent <input type="checkbox"/> 835 Patent - Abbreviated New Drug Application <input type="checkbox"/> 840 Trademark SOCIAL SECURITY <input type="checkbox"/> 861 HIA (1395ff) <input type="checkbox"/> 862 Black Lung (923) <input type="checkbox"/> 863 DIWC/DIWW (405(g)) <input type="checkbox"/> 864 SSID Title XVI <input type="checkbox"/> 865 RSI (405(g)) FEDERAL TAX SUITS <input type="checkbox"/> 870 Taxes (U.S. Plaintiff or Defendant) <input type="checkbox"/> 871 IRS—Third Party 26 USC 7609	<input type="checkbox"/> 375 False Claims Act <input type="checkbox"/> 376 Qui Tam (31 USC 3729(a)) <input type="checkbox"/> 400 State Reapportionment <input type="checkbox"/> 410 Antitrust <input type="checkbox"/> 430 Banks and Banking <input type="checkbox"/> 450 Commerce <input type="checkbox"/> 460 Deportation <input type="checkbox"/> 470 Racketeer Influenced and Corrupt Organizations <input type="checkbox"/> 480 Consumer Credit (15 USC 1681 or 1692) <input type="checkbox"/> 485 Telephone Consumer Protection Act <input type="checkbox"/> 490 Cable/Sat TV <input type="checkbox"/> 850 Securities/Commodities/Exchange <input type="checkbox"/> 890 Other Statutory Actions <input type="checkbox"/> 891 Agricultural Acts <input type="checkbox"/> 893 Environmental Matters <input type="checkbox"/> 895 Freedom of Information Act <input type="checkbox"/> 896 Arbitration <input type="checkbox"/> 899 Administrative Procedure Act/Review or Appeal of Agency Decision <input type="checkbox"/> 950 Constitutionality of State Statutes
REAL PROPERTY <input type="checkbox"/> 210 Land Condemnation <input type="checkbox"/> 220 Foreclosure <input type="checkbox"/> 230 Rent Lease & Ejectment <input type="checkbox"/> 240 Torts to Land <input type="checkbox"/> 245 Tort Product Liability <input type="checkbox"/> 290 All Other Real Property	CIVIL RIGHTS <input type="checkbox"/> 440 Other Civil Rights <input type="checkbox"/> 441 Voting <input type="checkbox"/> 442 Employment <input type="checkbox"/> 443 Housing/Accommodations <input type="checkbox"/> 445 Amer. w/Disabilities - Employment <input type="checkbox"/> 446 Amer. w/Disabilities - Other <input type="checkbox"/> 448 Education PRISONER PETITIONS Habeas Corpus: <input type="checkbox"/> 463 Alien Detainee <input type="checkbox"/> 510 Motions to Vacate Sentence <input type="checkbox"/> 530 General <input type="checkbox"/> 535 Death Penalty Other: <input type="checkbox"/> 540 Mandamus & Other <input type="checkbox"/> 550 Civil Rights <input type="checkbox"/> 555 Prison Condition <input type="checkbox"/> 560 Civil Detainee - Conditions of Confinement			

V. ORIGIN (Place an "X" in One Box Only)

- ☐ 1 Original Proceeding ☐ 2 Removed from State Court ☐ 3 Remanded from Appellate Court ☐ 4 Reinstated or Reopened ☐ 5 Transferred from Another District (specify) ☐ 6 Multidistrict Litigation - Transfer ☐ 8 Multidistrict Litigation - Direct File

VI. CAUSE OF ACTION

Cite the U.S. Civil Statute under which you are filing (Do not cite jurisdictional statutes unless diversity):

Brief description of cause:

VII. REQUESTED IN COMPLAINT:

☐ CHECK IF THIS IS A CLASS ACTION UNDER RULE 23, F.R.Cv.P.

DEMAND \$

CHECK YES only if demanded in complaint:

JURY DEMAND: ☐ Yes ☐ No

VIII. RELATED CASE(S) IF ANY

(See instructions):

JUDGE

DOCKET NUMBER

DATE

SIGNATURE OF ATTORNEY OF RECORD

FOR OFFICE USE ONLY

RECEIPT #

AMOUNT

APPLYING IFP

JUDGE

MAG. JUDGE

INSTRUCTIONS FOR ATTORNEYS COMPLETING CIVIL COVER SHEET FORM JS 44

Authority For Civil Cover Sheet

The JS 44 civil cover sheet and the information contained herein neither replaces nor supplements the filings and service of pleading or other papers as required by law, except as provided by local rules of court. This form, approved by the Judicial Conference of the United States in September 1974, is required for the use of the Clerk of Court for the purpose of initiating the civil docket sheet. Consequently, a civil cover sheet is submitted to the Clerk of Court for each civil complaint filed. The attorney filing a case should complete the form as follows:

- I.(a) Plaintiffs-Defendants.** Enter names (last, first, middle initial) of plaintiff and defendant. If the plaintiff or defendant is a government agency, use only the full name or standard abbreviations. If the plaintiff or defendant is an official within a government agency, identify first the agency and then the official, giving both name and title.
 - (b) County of Residence.** For each civil case filed, except U.S. plaintiff cases, enter the name of the county where the first listed plaintiff resides at the time of filing. In U.S. plaintiff cases, enter the name of the county in which the first listed defendant resides at the time of filing. (NOTE: In land condemnation cases, the county of residence of the "defendant" is the location of the tract of land involved.)
 - (c) Attorneys.** Enter the firm name, address, telephone number, and attorney of record. If there are several attorneys, list them on an attachment, noting in this section "(see attachment)".
- II. Jurisdiction.** The basis of jurisdiction is set forth under Rule 8(a), F.R.Cv.P., which requires that jurisdictions be shown in pleadings. Place an "X" in one of the boxes. If there is more than one basis of jurisdiction, precedence is given in the order shown below.
- United States plaintiff. (1) Jurisdiction based on 28 U.S.C. 1345 and 1348. Suits by agencies and officers of the United States are included here.
- United States defendant. (2) When the plaintiff is suing the United States, its officers or agencies, place an "X" in this box.
- Federal question. (3) This refers to suits under 28 U.S.C. 1331, where jurisdiction arises under the Constitution of the United States, an amendment to the Constitution, an act of Congress or a treaty of the United States. In cases where the U.S. is a party, the U.S. plaintiff or defendant code takes precedence, and box 1 or 2 should be marked.
- Diversity of citizenship. (4) This refers to suits under 28 U.S.C. 1332, where parties are citizens of different states. When Box 4 is checked, the citizenship of the different parties must be checked. (See Section III below; **NOTE: federal question actions take precedence over diversity cases.**)
- III. Residence (citizenship) of Principal Parties.** This section of the JS 44 is to be completed if diversity of citizenship was indicated above. Mark this section for each principal party.
- IV. Nature of Suit.** Place an "X" in the appropriate box. If there are multiple nature of suit codes associated with the case, pick the nature of suit code that is most applicable. Click here for: [Nature of Suit Code Descriptions](#).
- V. Origin.** Place an "X" in one of the seven boxes.
- Original Proceedings. (1) Cases which originate in the United States district courts.
- Removed from State Court. (2) Proceedings initiated in state courts may be removed to the district courts under Title 28 U.S.C., Section 1441.
- Remanded from Appellate Court. (3) Check this box for cases remanded to the district court for further action. Use the date of remand as the filing date.
- Reinstated or Reopened. (4) Check this box for cases reinstated or reopened in the district court. Use the reopening date as the filing date.
- Transferred from Another District. (5) For cases transferred under Title 28 U.S.C. Section 1404(a). Do not use this for within district transfers or multidistrict litigation transfers.
- Multidistrict Litigation – Transfer. (6) Check this box when a multidistrict case is transferred into the district under authority of Title 28 U.S.C. Section 1407.
- Multidistrict Litigation – Direct File. (8) Check this box when a multidistrict case is filed in the same district as the Master MDL docket.
- PLEASE NOTE THAT THERE IS NOT AN ORIGIN CODE 7.** Origin Code 7 was used for historical records and is no longer relevant due to changes in statute.
- VI. Cause of Action.** Report the civil statute directly related to the cause of action and give a brief description of the cause. **Do not cite jurisdictional statutes unless diversity.** Example: U.S. Civil Statute: 47 USC 553 Brief Description: Unauthorized reception of cable service
- VII. Requested in Complaint.** Class Action. Place an "X" in this box if you are filing a class action under Rule 23, F.R.Cv.P.
- Demand. In this space enter the actual dollar amount being demanded or indicate other demand, such as a preliminary injunction.
- Jury Demand. Check the appropriate box to indicate whether or not a jury is being demanded.
- VIII. Related Cases.** This section of the JS 44 is used to reference related pending cases, if any. If there are related pending cases, insert the docket numbers and the corresponding judge names for such cases.

Date and Attorney Signature. Date and sign the civil cover sheet.